INTERNATIONAL CIVIL AVIATION ORGANIZATION
ASIA AND PACIFIC OFFICE

REPORT OF THE TWENTY-THIRD MEETING OF THE ICAO REDUCED VERTICAL SEPARATION MINIMUM IMPLEMENTATION TASK FORCE (RVSM/TF/23)

BANGKOK, THAILAND

18 – 22 OCTOBER 2004

The views expressed in this Report should be taken as those of the Task Force and not the Organization

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History of the Meeting

Summary Report of the RVSM TF/23 Meeting

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1.1 Introduction

1.1.1 The Twenty-third Meeting of the ICAO Reduced Vertical Separation Minimum Implementation Task Force (RVSM/TF/23) was held at the Kotaite Wing of the ICAO Asia and Pacific Regional Office, Bangkok, Thailand from 18 to 22 October 2004.

1.2 Attendance

1.2.1 The meeting was attended by 31 participants from China, Hong Kong China, Japan, Republic of Korea (ROK), Singapore, Thailand, IATA, IFALPA and IFATCA. A complete list of participants is at **Appendix A**.

1.3 Officers and Secretariat

1.3.1 Mr. Sydney Maniam, Head (Air Traffic Services) Civil Aviation Authority of Singapore, continued as Chairman of the Task Force. Mr. Kyotaro Harano, Regional Officer ATM served as the Secretary for the meeting.

1.3.2 Mr. Keizo Udaka, Special Assistant to the Director of ATS System Planning Division, Japan Civil Aviation Bureau (JCAB), Japan and Mr. Jang, Dong-Cheol, Assistant Director, ATS Planning Division, Civil Aviation Safety Authority (CASA), the ROK were Co-Chairmen of the ATC Operations Work Group (ATC/WG). Mr. Nopadol Sangngurn, Senior Vice-President (Training), AEROTHAI, Thailand was the Chairman of the Safety & Airspace Monitoring Work Group (SAM/WG).

1.4 Opening of the Meeting

1.4.1 Mr. Sydney Maniam welcomed the participants and opened the RVSM/TF/23 meeting. He highlighted that at the Special ATS Coordination Meeting on RVSM Implementation in Incheon, Naha and Tokyo FIRs (SCM/RVSM) held in July 2004, the RVSM/TF had agreed to adopt the ICAO RVSM Implementation Strategy that had been used for the Western Pacific/South China Sea (WPAC/SCS) and the area south of the Himalayas and over the Bay of Bengal and beyond (Bay of Bengal and Beyond) areas. In this context, the meeting would have to review the various activities relating to the implementation process and ensure that these activities were completed on time. In addition, the meeting would have to prepare the safety assessments, through the Monitoring Agency for the Asia Region (MAAR) to support the introduction of RVSM in a safe manner. The meeting would also need to ascertain the readiness of operators and States concerned in order to meet the target date of implementation. To this end, the key elements of RVSM implementation would be addressed through the three work groups of the RVSM/TF. Mr. Maniam urged all concerned to work closely so that the implementation process could be completed in a systematic and efficient way.

1.4.2 Mr. Kyotaro Harano on behalf of Mr. Lalit Shah, Regional Director of the ICAO Asia and Pacific Office, welcomed all the delegates to the meeting. Japan and the ROK had indicated at the RVSM/TF/18 meeting held in July 2003 that they would like the RVSM/TF to participate in the RVSM implementation planning for the Incheon, Naha and Tokyo FIRs. Consequently, SCM/RVSM was convened in July 2004 to obtain an update on progress with the implementation and planning process from Japan and the ROK, respectively. The ROK particularly requested the support of the RVSM/TF to conduct the safety assessment for the RVSM implementation in the Incheon FIR. In this regard, the SCM/RVSM had requested MAAR to undertake the readiness and safety assessment for the Incheon FIR. Mr. Harano suggested that the impact of RVSM implementation on the broader issues of air traffic management and the traffic flows in the adjacent FIRs also should be addressed.

1.5 **Documentation and Working Language**

1.5.1 The working language of the meeting as well as all documentation was in English.

1.5.2 Eleven (11) Working Papers and four (4) Information Papers were presented to the meeting. A list of papers is included at **Appendix B**.

Agenda Item 1: Adoption of Agenda

1.1 The meeting reviewed the provisional agenda presented by the Chairman and adopted it as the agenda for the meeting. The adopted agenda is at **Appendix C** to the Report. The meeting also reviewed the provisional agenda for the ATC Operations Work Group (ATC/WG) and agreed to add "transition procedures (including transition between meter/feet)" in the Agenda Item 2. The revised agenda for the ATC/WG is attached as **Appendix D** to the Report. The provisional agenda for the SAM/WG was also reviewed and adopted as the agenda for the SAM/WG. The adopted agenda for the SAM/WG is at **Appendix E** to the Report.

Agenda Item 2: Operational Considerations

Readiness of States

2.1 The meeting reviewed the readiness of Japan and the ROK to implement RVSM in domestic airspace of the Naha and Tokyo FIRs, and Incheon FIR, respectively.

2.2 Japan informed the meeting that preparations for the introduction of RVSM in their domestic airspace of the Naha and Tokyo FIRs were progressing well. Japan also notified the meeting that RVSM implementation required an amendment to the Japan Civil Aeronautics Laws. To provide the necessary time to complete the amendment, Japan proposed to delay the introduction of RVSM for at least 3 months. RVSM implementation would most likely take place on 24 November 2005.

2.3 The ROK reported that preparations for the introduction of RVSM were progressing well. The meeting noted that the ROK had commenced work relating to the activities of the RVSM task list following the SCM/RVSM meeting. According to the outcome of the SCM/RVSM meeting, the ROK had published the Aeronautical Information Circular (AIC) on 22 July 2004 containing information on RVSM implementation within Incheon FIR.

2.4 The meeting was advised by the ROK that they had made a rule for the approval process for RVSM operations in the Incheon FIR, which had been reflected in the Civil Aviation Act on 30 September 2003. According to the information in the AIC dated 22 July 2004, aircraft operators should obtain RVSM operational approval from the appropriate State authority no later than 30 April 2005. The meeting was informed that detailed information for RVSM operational procedures including ATC procedures and flight procedures, etc. in RVSM airspace would be provided by the end of 2004.

2.5 The meeting also noted that ROK had submitted Large Height Deviation (LHD) reports collected during the 6 months from April to September 2004 to MAAR for RVSM airspace safety assessment. Only one LHD exceeding 300 feet had occurred. The ROK collected for two months from 1 August to 30 September 2004 the Traffic Sample Data (TSD) derived from flight plan electronic data and they would be submitted to MAAR no later than 31 October 2004.

2.6 It was noted that the ROK was providing basic RVSM training to ATC controllers once a month based on the implementation experiences of other States in the Asia Region, in preparation for RVSM implementation in the Incheon FIR. In addition, the ROK was planning to carry out simulated RVSM operations, using the Incheon ACC's air traffic control system equipped with self-contained simulation functions.

2.7 The ROK hoped that the 6th RVSM Seminar would be held in Seoul, ROK. The meeting considered that the seminar would be extremely helpful for controllers and operators to acquire general knowledge on RVSM operations.

2.8 The ROK concurred with the proposal by Japan to revise the implementation date of RVSM to 24 November 2005.

2.9 The meeting agreed to use 24 November 2005 as the tentative date for RVSM implementation for the domestic airspace of the Naha and Tokyo FIRs, and Incheon FIR. Japan would inform ICAO if there was any change to the implementation date.

Provisional RVSM Operational Plan

2.10 The meeting agreed that a provisional RVSM operational plan should be developed to meet the target date of implementation of 24 November 2005. To this end, Japan and the ROK agreed that RVSM would be implemented in the domestic airspace of the Naha and Tokyo FIRs, and Incheon FIR from FL290 to FL410 (inclusive). The airspace where RVSM would be applied would be exclusive for RVSM-approved aircraft, except for special circumstances which would be spelt out in the AIP Supplement or AIP Amendment for RVSM operations. In addition, the single alternate Flight Level Orientation Scheme (FLOS) would be utilized.

Usable Altitude on A593 and B576

2.11 The meeting noted the current arrangements for flight level assignment to aircraft operating on ATS routes A593 and B576 as shown in **Appendix F** to the Report.

2.12 Japan presented a proposal to revise the assignment of levels for traffic operating on A593 and B576 with the implementation of RVSM. At present, FL250, 290 and 410 were assigned to eastbound traffic as standard usable levels, while FL240, 280 and 390 were assigned to westbound traffic on A593, a major trunk route connecting Japan and China. For B576 that crosses A593 at NIRAT, FL260, FL310 and FL350 were assigned to southbound traffic as standard usable levels, while FL270, FL330 and FL370 were assigned to northbound traffic.

2.13 Japan further reported that over the past few years, air traffic between Japan and China had been rapidly increasing, and would increase further with the inauguration of the second runway at Pudong International Airport. When RVSM was implemented in the Incheon, Naha and Tokyo FIRs in 2005, all RVSM flight levels would be usable on B576, and thus, airspace capacity could be enhanced. The meeting, however, was informed that RVSM would not be applied in the portion of airspace west of SADLI on A593 because RVSM would not be implemented in the Shanghai FIR. This would require Fukuoka ACC to complete transition from RVSM to CVSM for aircraft operating on A593 before SADLI, and thus airspace capacity enhancement could not be achieved.

2.14 The meeting also noted that JCAB proposed to review the current flight level assignment and reallocate usable altitudes for each direction on A593 and B576 as shown below, in order to enhance airspace capacity and maximize benefits which would be derived from RVSM implementation. Details are shown in the **Appendix G** to this Report.

a) Five (5) flight levels for each direction on B576

Southbound: FL260, FL320, FL340, FL360 and FL400
Northbound: FL270, FL300, FL310, FL350 and FL390

b) Four (4) flight levels for each direction on A593:

Eastbound: FL250, FL290, FL330, FL410
Westbound: FL240, FL280, FL370, *FL380→FL390* (transition required)

2.15 It was noted that there was a Memorandum of Understanding (MOU) in effect for approximately 20 years among ACCs concerned, which specified the standard usable altitudes on A593 and B576. When the current flight level assignment was reviewed and its modification was agreed upon by all concerned parties, the MOU would need to be revised accordingly.

2.16 The ROK presented a proposal for the assignment of levels for traffic operating on A593 and B576 with the implementation of RVSM. The meeting recalled that at the SCM/RVSM (July 2004) it was suggested that a review of the assignment of the flight levels for ATS routes A593 and B576 be conducted for further discussion at the RVSM/TF/23 meeting.

2.17 The meeting recognized that the traffic volume on the A593 and B576 was increasing. The assignment of levels for A593 and B576, therefore, needed to be reviewed to accommodate future demand.

2.18 The meeting also noted that the ROK proposed to re-allocate RVSM flight levels based on the single alternate FLOS on A593 and B576 as follows;

a) Assignment of levels for A593

- Westbound: All RVSM Even Levels except FL300 and FL380

Incheon ACC: FL320, FL340 and FL360

Fukuoka ACC: FL400 (*FL300 and FL380 not available)

- Eastbound: All RVSM Odd Levels

Incheon ACC: FL310, FL330, FL350 and FL370

Fukuoka ACC: FL290, FL390 and FL410

b) Assignment of levels for B576

- Northbound: FL310, FL330, FL350 and FL370

- Southbound: FL320, FL340 and FL360 (*FL300 and FL380 not available)

2.19 The ROK stated that they would be willing to provide ATS services for air traffic for the entire band of flight levels on A593 (LAMEN- ONIKU segment). The ROK further stated that the ROK had sufficient capabilities, radar and radio communication system, etc. to provide the ATS services on this segment.

2.20 The ROK proposed that China establishes a direct communication line and concludes an LOA between Incheon and Shanghai ACCs for efficient traffic flows on A593 and smooth RVSM implementation.

2.21 It was noted that FL240, FL250, FL280, FL290, FL390 and FL410 between LAMEN and ONIKU on A593 were delegated to Fukuoka and Shanghai ACCs. All other flight levels were available under the control of Incheon ACC on A593 (LAMEN- ONIKU segment).

2.22 The meeting noted the above proposals presented by Japan and the ROK, respectively. China emphasized strongly that the RVSM/TF meetings were not the appropriate fora to discuss these sensitive matters. China further stressed that this issue should be discussed at the appropriate senior level through other channels.

Control of Aircraft on A593 and B576

2.23 The meeting noted that the current arrangements for flight levels assignment for traffic operating on A593 would result in a situation where Fukuoka ACC controlled six levels and Incheon ACC controlled other levels at NIRAT. In this regard, the meeting requested MAAR to take this factor into account when conducting the safety assessments for RVSM implementation. MAAR would study the matter and provide an update at the next RVSM/TF meeting.

2.24 IATA and IFALPA expressed concern about the existing arrangements for aircraft operating on A593 and B576 to be under the control of two different ACCs at a common crossing point and requested further study to be done by all concerned.

Transition Areas and Procedures

2.25 The ROK presented the proposed transition areas and transition procedures for conversion of levels of aircraft operating between Incheon FIR and Shanghai and Pyeongyang FIRs, respectively, as detailed below:

2.26 As the Incheon FIR was adjacent to the Pyeongyang and Shanghai FIRs where RVSM would not be applied, it was necessary to establish RVSM transition areas and procedures for altitude conversion between the non-RVSM and the RVSM airspaces when RVSM was implemented within the Incheon FIR.

2.27 According to the LOAs between Incheon ACC and Qingdao and Pyeongyang ACCs, level conversion areas had been established for the purpose of conversion between Metric levels and FLs within the Incheon FIR as follows:

a) Level conversion between AGAVO and GONAV on G597 airway (20NM)

Direction of flight	
180-360° (FLs →Metric)	0-179° (Metric →FLs)
FL390 →12,000m (FL394)	12,600m (FL413) →FL410
FL350 →10,800m (FL354)	11,400m (FL374) →FL370
FL310 →9,600m (FL315)	10,200m (FL335) →FL330
FL280 →8,400m (FL276)	9,000m (FL295) →FL290
FL260 →7,800m (FL256)	8,100m (FL266) →FL270
FL240 →7,200m (FL236)	7,500m (FL246) →FL250

b) Level conversion between INTOS and TENAS on B467 airway (20NM)

Direction of flight	
180-360° (Metric →FLs)	0-179° (FLs →Metric)
11,600m (FL381) →FL390	FL410 →12,100m (FL397)
10,600m (FL348) →FL350	FL370 →11,100m (FL364)
9,600m (FL315) →FL310	FL330 →10,100m (FL331)
8,600m (FL282) →FL280	FL290 →9,100m (FL299)
	FL270 →8,100m (FL266)

c) Level conversion between SABET and PAVLA on B332 airway (20NM)

Direction of flight	
180-360° (FLs →Metric)	0-179° (Metric →FLs)
FL390 →11,600m (FL381)	12,100m (FL397) →FL410
FL350 →10,600m (FL348)	11,100m (FL364) →FL370
FL310 →9,600m (FL315)	10,100m (FL331) →FL330
FL280 →8,600m (FL282)	9,100m (FL299) →FL290
	8,100m (FL266) →FL270

2.28 In light of the above, the RVSM transition areas would be established on airway segments adjoining Pyeongyang and Shanghai FIRs where RVSM would not be implemented, based on the current conversion areas between metric levels and flight levels as follows:

a) on G597 ATS Route: between AGAVO and NOPIK (80NM)

b) on A593 ATS Route: between SADLI and 10NM west of NIRAT (46NM)

c) on B467 ATS Route: between INTOS and TENAS (20NM)

2.29 The transition areas would be established within radar and radio communication coverage. The level conversion within the transition areas would be carried out from metric levels to RVSM levels, and vice versa, without double transitions from metric levels to conventional non-RVSM levels (CVSM) and then to RVSM levels.

2.30 The meeting also noted that level assignment between the non-RVSM and the RVSM airspaces would be agreed based on LOAs between adjacent ACCs and Incheon ACC. (LOA Amendment would be required between adjacent ACCs).

2.31 The ROK would coordinate with China and the Democratic People's Republic of Korea with a view to incorporate the transition areas and transition procedures in the final RVSM operational plan for the Incheon FIR. The ROK would provide an update at the next RVSM/TF meeting.

2.32 The meeting recognized that other transition areas may have to be identified to facilitate the safe and efficient transition of aircraft from other adjacent FIRs. The corresponding transition procedures would also have to be developed. In this regard, Japan and the ROK agreed to review the provisional RVSM operational plan and incorporate the necessary transition areas. In addition, Japan and the ROK would coordinate with the adjacent FIRs to carry out the transition

procedures. Japan and the ROK would provide details of the transition areas and transition procedures at the next RVSM/TF meeting.

Contingency Procedures

2.33 The meeting recognized that the contingency procedures that had been developed for the WPAC/SCS area could be utilized for RVSM operations in the Incheon, Naha and Tokyo FIRs. Japan and the ROK agreed to review the contingency procedures with a view to adopt the relevant sections that would be applicable for their RVSM operations. The finalized contingency procedures for RVSM operations would be incorporated in the AIP Supplement or AIP Amendment for RVSM implementation. Japan and the ROK would provide updates at the next RVSM/TF meeting.

Phraseologies for RVSM Operations

2.34 The meeting noted the phraseologies relating to RVSM operations would be incorporated in Amendment 3 to the *Procedures for Air Navigation Service-Air Traffic Management* (PANS-ATM, Doc 4444). State Letter (ref AN 13/2.1-04/72) on the Amendment 3 of the PANS-ATM was issued on 30 July 2004, which is attached to the Report as **Appendix H**. The meeting agreed that the phraseologies should be adopted by Japan and the ROK for RVSM implementation. Japan and the ROK would include the phraseologies for RVSM operations in the AIP Supplement and AIP Amendment, respectively.

Publication of AIC

2.35 The meeting noted that Japan and the ROK had published their AICs on 13 May 2004 and 22 July 2004, respectively, to provide operators with advance notification of RVSM implementation. Since the target date of RVSM implementation had been revised, the meeting agreed that Japan and the ROK should issue an amendment to the AICs to inform operators of the change. The amendment should be published by the end of 2004.

Publication of AIP Supplement/AIP Amendment

2.36 The meeting reviewed the draft AIP Supplement that had been used for RVSM implementation in the WPAC/SCS area. Japan and the ROK agreed to incorporate the relevant sections that could be applicable and publish them in the AIP Supplement or AIP Amendment by 31 May 2005 to provide operators with comprehensive information on the policies and procedures for RVSM operations. The sample AIP Supplement which could be referred by the ROK is at **Appendix I** to the Report.

Letters of Agreement (LOA)

2.37 The meeting recognized the need for Japan and the ROK to coordinate with adjacent ACCs to implement the relevant procedures for RVSM operations. These procedures should be incorporated in the LOAs with the ACCs concerned, in order to facilitate the implementation of RVSM. Japan and the ROK agreed to follow up with the ACCs involved and provide details at the next RVSM/TF meeting.

2.38 IATA expressed concern about the need to coordinate with Taibei ACC regarding the transit of aircraft operating on B576 from and into Taibei FIR. Japan agreed that Naha ACC would liaise with Taibei ACC and provide an update at the next Task Force Meeting

Agenda Item 3: Issues relating to Airworthiness and Approval of Aircraft

Airworthiness and Approval of Aircraft Programme

3.1 The meeting noted that the airworthiness and aircraft approval process for RVSM operations in Inchoen, Naha and Tokyo FIRs would base on the *Guidance Material on the Implementation of a 300 m (1 000 ft) Vertical Separation Minimum (VCM) for Application in the Airspace of the Asia and Pacific Region.* The meeting reviewed and updated the task list for the Airworthiness and Approval of Aircraft activities as shown in **Appendix J**.

Agenda Item 4: Safety and Airspace Monitoring Considerations

Review the Readiness and Safety Assessments in the Planned RVSM Airspace

4.1 The meeting recalled that the SCM/RVSM meeting held in Bangkok between 5 and 7 July 2004 requested MAAR to undertake the readiness and safety assessment works. The meeting also recalled that the monitoring functions of the airspace planned for RVSM implementation in the Incheon, Naha and Tokyo FIRs were under the responsibility of the Pacific Approvals Registry and Monitoring Organization (PARMO). Due to the commitments for the domestic RVSM implementation in the United States of America, the PARMO had confirmed that they would not be able to provide the support for the readiness and safety assessment works required and requested MAAR to undertake this work for them. In this regard, MAAR agreed that they would provide the necessary Regional Monitoring Agency services for the pre-RVSM implementation in the Incheon, Naha and Tokyo FIRs. ICAO and MAAR would coordinate with PARMO for the safety assessment works for the implementation of RVSM in the planned airspace.

4.2 To facilitate the readiness and safety assessments, Japan and the ROK agreed to submit: (1) the traffic sample data (TSD) for the period of **1 August to 30 September 2004** no later than 31 October 2004, (2) monthly LHD reports, **starting from January 2004**, and (3) aircraft registration with the RVSM approval records to MAAR in addition to the PARMO. All templates and forms for the submission of the required data were available at MAAR's website at www.aerothai.co.th/maar.

4.3 In view of the complicated flight level arrangements and transition tasks from RVSM to CVSM among the three States, especially for ATS routes A593 and B576 within the Incheon FIR, MAAR raised concerns on the difficulties to assess risks involved in the planned RVSM airspace. In this regard, MAAR would have to consult PARMO in order to provide accurate results of the safety assessment. MAAR appreciated the urgency of this work and, therefore, would attempt to make arrangements for the consultation as soon as possible.

Agenda Item 5: Implementation Management Considerations

RVSM Seminar/6

5.1 The meeting agreed that an RVSM seminar should be held to provide operators and ATS providers with information on the requirements for RVSM operations. To this end, the ROK kindly offered to host the seminar in conjunction with the next RVSM/TF meeting. The ROK would provide the ICAO Regional Office with further details in due course.

Task List

5.2 The meeting noted that the SCM on the RVSM Implementation in the Incheon, Naha and Tokyo FIRs had adopted the list of tasks used by the RVSM/TF in its previous implementation plan to progress the overall RVSM implementation process and set the time frames for the completion of related activities for the Incheon, Naha and Tokyo FIRs.

5.3 SAM/WG reviewed and updated the task list. The updated task list is provided at the Appendix J to the Report.

Draft Amendment to the *Regional Supplementary Procedures*

5.4 The meeting recalled that the SCM/RVSM meeting had recognized the need to amend the *Regional Supplementary Procedures* (SUPPS, Doc 7030) to incorporate the Incheon FIR in the list of RVSM applicable airspaces. Naha and Tokyo FIRs had already been included in the SUPPS since 2000 when they started RVSM operations in their oceanic control airspace. The meeting reviewed the draft amendment to the SUPPS to include the Incheon FIR.

5.5 The meeting invited the ROK to propose the reasons to the draft amendment as a proposer State. The meeting agreed to use 24 November 2005 as the tentative target date for implementation and inserted the date in Item e) Applicability Date. The draft amendment proposal is provided in the **Appendix K** to the Report.

5.6 IATA pointed out that the FIRs in the area south of the Himalayas and over the Bay of Bengal and beyond (Bay of Bengal and Beyond area) were not included in the list of the SUPPS as RVSM applicable airspaces. The Secretariat clarified that the SUPPS amendment had been circulated to States and international organizations and forwarded to ICAO Headquarters on 20 June 2004 for approval by the Council.

Review of RVSM/TF/22 – Review of FLOS

5.7 The RVSM/TF/22 meeting was held on 24-28 September 2004 at the Regional Office to review the operation of two different FLOS, i.e. modified single alternate FLOS in the WPAC/SCS area and single alternate FLOS in the Bay of Bengal and Beyond area. It was noted that the establishment of the modified single alternate FLOS for the WPAC/SCS areas was agreed at the RVSM/TF/9 meeting (January 2001) for the implementation of RVSM on the revised ATS route structure for the SCS area. At the RVSM/TF/9 meeting, IATA had proposed the modified single alternate FLOS for the initial phase of RVSM implementation. Under the proposed scheme, the six parallel uni-directional routes (viz, L642, M771, N892, L625, N884 and M767) would operate at the even flight levels, viz, FL320, FL340, FL360 and FL380. For the bi-directional crossing tracks, the level assignment would be the corresponding odd eastbound levels (FL330, FL370 and FL410) and westbound levels (FL310, FL350 and FL390).

5.8 It was further noted that the RVSM/TF/22 meeting (Review of FLOS meeting, 20 – 24 September 2004) recognized that the selection of the modified single alternate FLOS for the WPAC/SCS airspace provided for the optimum arrangement of flight levels for the SCS uni-directional parallel route structure, which had a number of crossings with bi-directional routes. This arrangement was compatible at the time with the CVSM being used in adjacent non-RVSM airspaces. Corresponding transition areas were established for changes between the FLOS.

5.9 The RVSM/TF/22 meeting noted that the SCM on Transition Procedures (SCM/Transition, September 2003) had recognized that some States had expressed concerns over transition problems that would arise when RVSM was implemented in the Bay of Bengal and Beyond area on 27 November 2003 where the single alternate FLOS would be used. This would result in

additional transition problems with the modified single alternate FLOS being used in WPAC/SCS area. The RVSM/TF also noted that the transition requirements would increase when RVSM was implemented by Japan and the Republic of Korea in 2005.

5.10 Information provided by MAAR to the RVSM/TF/22 meeting summarized the number of LHD occurrences and LHD duration experienced between January 2003 and July 2004. Based on this information, it was found that the LHD occurrences were more significant in the WPAC/SCS.

5.11 The RVSM/TF/22 meeting agreed that any modification to the FLOS for the WPAC/SCS area should be planned to coincide with the implementation of RVSM in Japan and the ROK, in order to avoid too many changes to operations in the region. Japan would coordinate with the ROK and confirm the implementation date at the RVSM/TF/23 scheduled to be held from 18-22 October 2004.

5.12 The RVSM/TF/22 meeting reviewed proposals submitted by the Philippine and Thailand for flight level assignment. Recognizing the need to maintain safety, efficiency and regularity of operations in the WPAC/SCS area, the RVSM/TF/22 meeting developed a provisional revised plan for the assignment of levels and corresponding no pre-departure coordination (No-PDC) procedures. The proposed flight level assignment and No-PDC levels for each route category (the routes were categorized under the Philippine proposal for ease of reference) was as follows:

Class I	–	Both ways:	FL310, FL320, FL350, FL360, FL390 and FL400
Class II	–	Eastbound:	FL290, FL330, FL370 and FL410
		Westbound:	FL280, FL300, FL340 and FL380
Class III	–	Eastbound:	FL310, FL350 and FL390
		Westbound:	FL320, FL360 and FL400
Class IV	–	All RVSM flight levels subject to bilateral agreement between ATC units	

5.13 A chart showing details of the proposed changes to the flight level assignment plan for the WPAC/SCS area is provided in the **Appendix L** to the Report.

Agenda Item 6: Review of Action Items

6.1 The meeting reviewed and updated the list of activities that had to be completed as part of the ICAO RVSM implementation process. The updated list is shown in Appendix J.

6.2 It was felt during the update of the task list that the domestic airspace or the oceanic airspace of Naha and Tokyo FIRs be clearly indicated. Japan provided the meeting with the current RVSM applicable oceanic airspace as attached as **Appendix M** to the Report.

Agenda Item 7: Future Work – Meeting Schedule

Future RVSM/TF Meetings

7.1 The meeting agreed to progress the implementation plan based on the following schedule of meetings:

RVSM Seminar/6 – RVSM/TF/25	March 2005 (tentative)	Seoul, ROK
RVSM/TF/27	May 2005	Bangkok
RVSM/TF/28 (Go/No-go meeting)	August 2005	Bangkok
RVSM/TF/29 (90-day follow-up review)	February 2006	Bangkok
RVSM/TF/30 (One-year-follow-up review)	November 2006	Bangkok

Agenda Item 8: Any Other Business

Closing of the Meeting

8.1 In closing the meeting, Mr. Sydney Maniam thanked all participants for their active participation and efforts in addressing key issues relating to RVSM implementation in Japan and the ROK. He reminded States concerned that operational requirements should be considered in detail in order to finalize the RVSM plan for the areas. He also urged all involved to accord a high priority to the completion of related activities that had been identified as part of the implementation process.

8.2 Mr. Maniam also expressed appreciation to the ICAO Regional Office and its personnel for the excellent and professional support provided before and during the meeting. Their efforts had contributed significantly to the successful completion of the meeting.

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LIST OF WORKING PAPERS (WPs) AND INFORMATION PAPERS (IPs)

WORKING PAPERS

NUMBER	AGENDA	WORKING PAPERS	PRESENTED BY
WP/1	1	Provisional Agenda	Chairman
WP/2	1	Provisional Agenda for ATC Operations Work Group	Chairman
WP/3		*WITHDRAWN*	
WP/4	2, 3	Review of Draft AIP Amendment for RVMS Implementation	Secretariat
WP/5	5	Implementation of the Reduced Vertical Separation Minimum (RVSM) in Japan and Republic of Korea	Chairman
WP/6	5	Amendment Proposal of the Regional Supplementary Procedures	Secretariat
WP/7	8	New Provisions Concerning RVSM Phraseologies in the PANS-ATM	Secretariat
WP/8	4	Proposed Agenda for the Safety and Airspace Monitoring Work Group (SAM/WG)	Chairman SAM/WG
WP/9	2	Revised Implementation Date of RVSM in Japan	Japan
WP/10	2	Reallocation of flight levels on B576 and A593 where RVSM Implementation is planned in 2005	Japan
WP/11	2	FLOS on ATS Route A593 and B576	Republic of Korea
WP/12	4	Summary of Data Required in the Readiness and Safety Assessments for the RVSM Implementation	MAAR

INFORMATION PAPERS

NUMBER	AGENDA	INFORMATION PAPERS	PRESENTED BY
IP/1	-	List of Working Papers (WPs) and Information Papers (IPs)	Secretariat
IP/2	2	Review of the Outcomes of the Twenty-second Meeting of the RVSM Task Force on the Operation of Different RVSM Flight Level Orientation Schemes in the Asia/Pacific Region	Secretariat
IP/3	2	Transition area and procedure in the Incheon FIR	Republic of Korea
IP/4	2	RVSM Readiness of the Republic of Korea	Republic of Korea

****

AGENDA

Agenda Item 1:	Adoption of Agenda
Agenda Item 2:	Operational Considerations
Agenda Item 3:	Issues Relating to Airworthiness and Approval of Aircraft
Agenda Item 4:	Safety and Airspace Monitoring Considerations
Agenda Item 5:	Implementation Management Considerations
Agenda Item 6:	Review of Action Items
Agenda Item 7:	Future Work – Meeting Schedule
Agenda Item 8:	Other Business

…….

AGENDA FOR ATC OPERATIONS WORK GROUP

Agenda Item 1: Adoption of proposed agenda

Agenda Item 2: Finalise operational plan for RVSM implementation

- RVSM airspace
- Flight level orientation scheme
- Band of RVSM levels
- Assignment of RVSM levels
- Transition Procedures (including the transition between meter/feet)
- Contingency procedures (including weather deviation procedures)

Agenda Item 3: Publication of documents

- AIC
- AIP Supplement
- Trigger NOTAM

Agenda Item 4: Implementation management issues

- ATC coordination procedures
- Letters of Agreement

Agenda Item 5: Any other matters

Agenda Item 6: Future work

…….

AGENDA FOR
THE SAFETY AND AIRSPACE MONITORING WORK GROUP [SAM/WG]

Agenda Item 1. Agree on agenda

Agenda Item 2. Review Duties and Responsibilities of Monitoring Agency for Asia Region [MAAR]

Agenda Item 3. Review the readiness assessment in the planned RVSM airspace

Agenda Item 4. Review the progress of the safety assessments

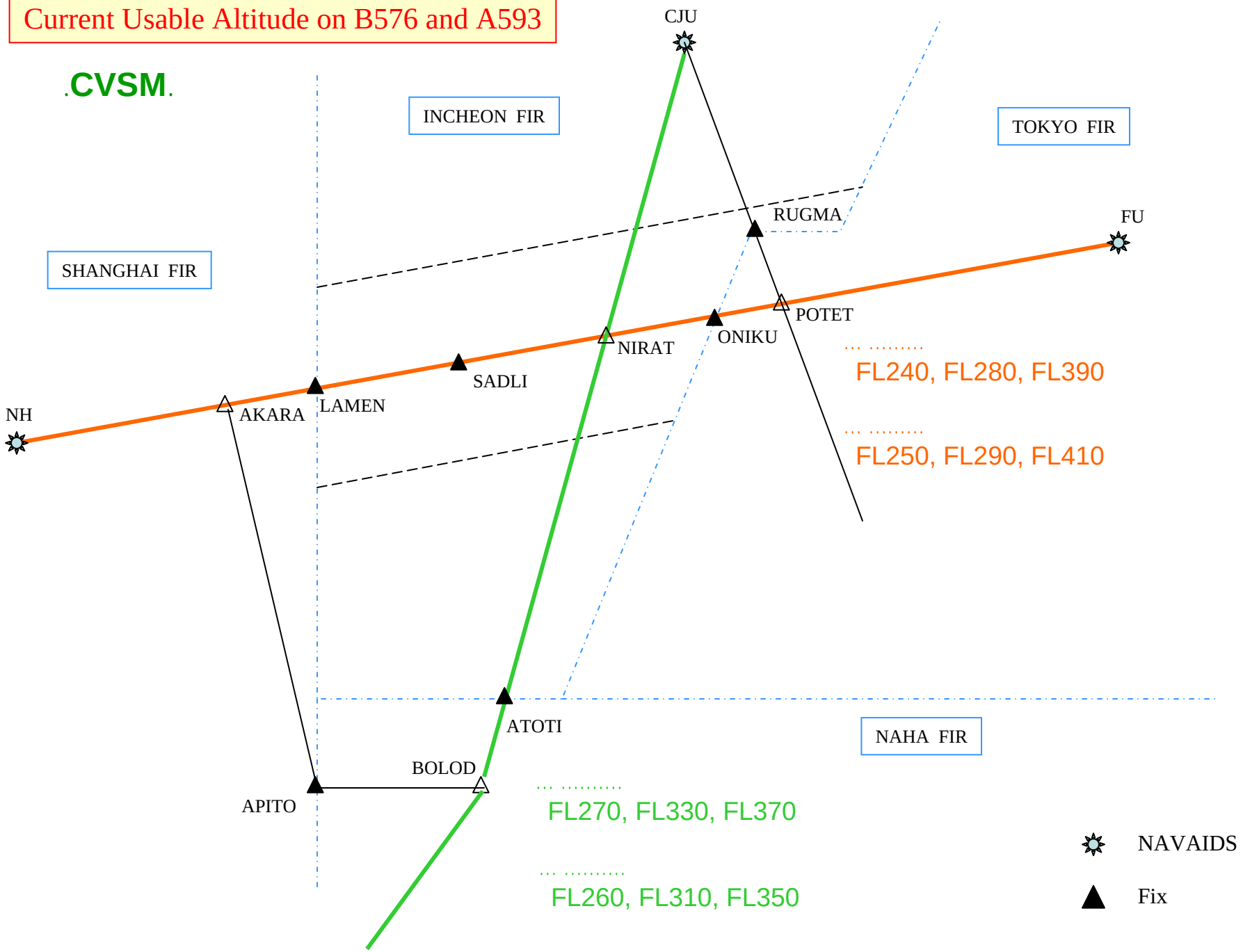
Agenda Item 5. Review the RVSM TF Task List

Agenda Item 6. Future SAM Work Program

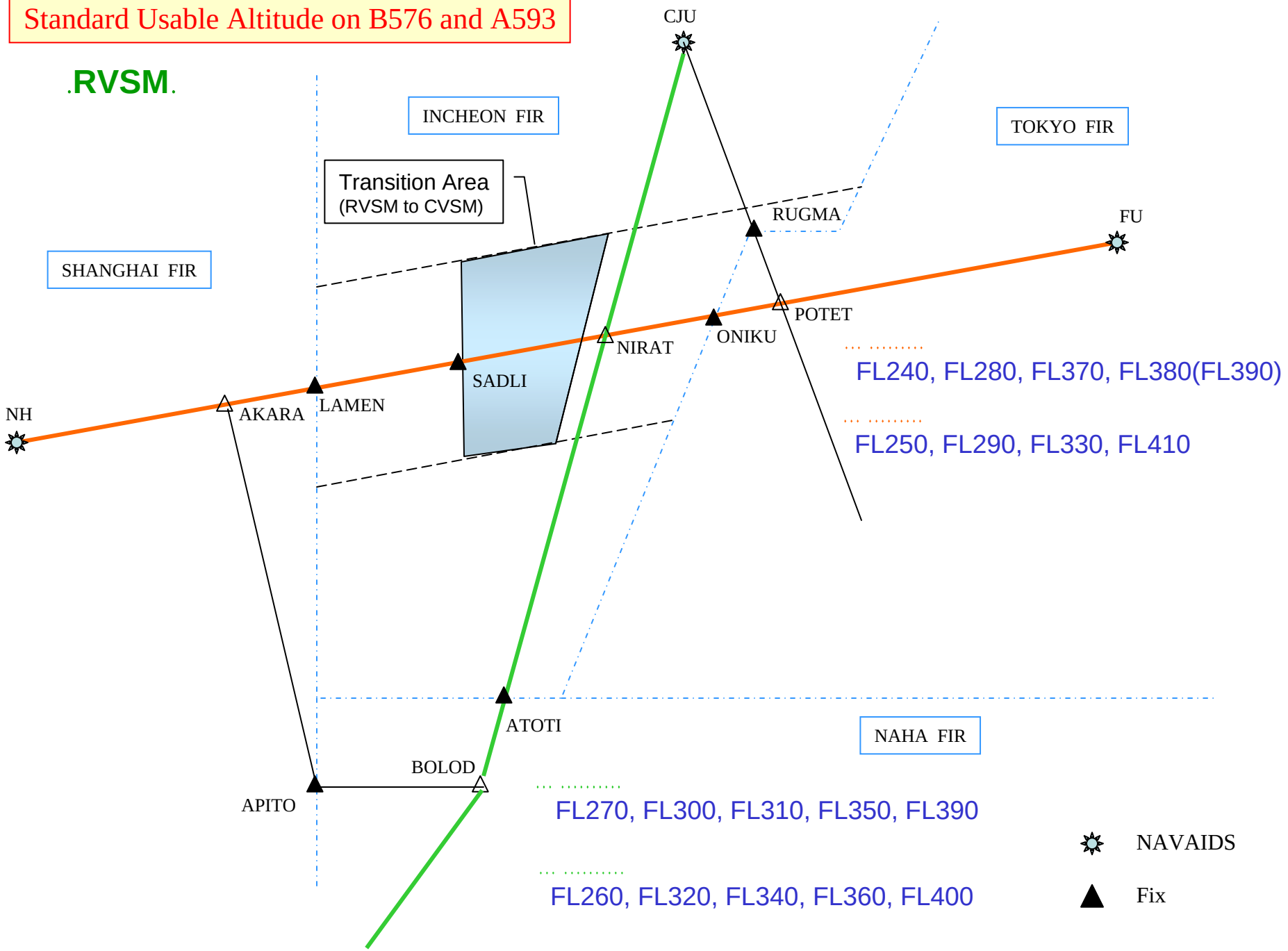
Agenda Item 7. Any Other Business

…….....

Current Usable Altitude on B576 and A593



Standard Usable Altitude on B576 and A593



International Civil Aviation Organization
Organisation de l'aviation civile internationale
Organización de Aviación Civil Internacional
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Ref.: AN 13/2.1-04/72

30 July 2004

Subject: Approval of Amendment 3 to the PANS-ATM

Action required: a) Implementation of the amendment on 25 November 2004; b) Publication of any differences as of 25 November 2004

Sir/Madam,

1. I have the honour to inform you that the Air Navigation Commission, acting under delegated authority, at the tenth meeting of its 166th Session, on 3 June 2004, approved Amendment 3 to the *Procedures for Air Navigation Services — Air Traffic Management*, Fourteenth Edition (PANS-ATM, Doc 4444) for applicability on 25 November 2004. The amendment was approved on 29 June 2004 by the President of the Council on behalf of the Council in accordance with established procedure.

2. Amendment 3 stems from a review by the Secretariat of provisions in respect of procedures for aerodrome control service and definitions concerning runway safety as well as air traffic control phraseologies, Recommendation 3/3 of the fourth meeting of the Global Navigation Satellite System (GNSS) Panel and the Meteorological Divisional Meeting (2002).

3. The amendment introduces new or amended provisions concerning:

a) runway incursions and reporting thereon;

b) phraseologies dealing with 8.33 kHz channel spacing, reduced vertical separation minimum (RVSM) and GNSS; and

c) the transmission of special air-reports and other meteorological information.

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4. The inclusion of new phraseologies for 8.33 kHz channel spacing and RVSM in Amendment 3 to the PANS-ATM obviates the need for similar provisions in the *Regional Supplementary Procedures* (SUPPs, Doc 7030). A consequential amendment, deleting the corresponding provisions from the SUPPs with effect from 25 November 2004, is therefore in progress. As of that date, the PANS-ATM provisions will supersede the SUPPs.

5. Copies of the interim edition of the amendment are being sent to you under separate cover. The interim edition contains the text as it was approved by the Council and is being sent to you pending the issue of the replacement pages for the PANS-ATM in which the amendment will be incorporated. The replacement pages are expected to be forwarded to you in October 2004.

6. In accordance with the decision of the 26th Session of the Assembly, I would like to bring to your attention the Organization's long-standing practice of providing documentation to States upon request. Accordingly, the relevant working papers on Amendment 3 to the PANS-ATM and corresponding minutes of the Council and the Air Navigation Commission proceedings can be made available. In light of the costs involved, however, only one copy of such documents will normally be provided.

7. Your Government is invited by the Council to implement the provisions of the PANS-ATM as amended. In this connection, I draw your attention to the decision taken by the Council, on 1 October 1973, to discontinue the publication of differences in Supplements to the PANS documents and, instead, to request States to publish up-to-date lists of significant differences from PANS documents in their Aeronautical Information Publications.

8. May I, therefore, invite your Government to publish in your Aeronautical Information Publication a list of any significant differences which will exist on 25 November 2004 between the amended provisions of the PANS-ATM and your national regulations and practices.

Accept, Sir/Madam, the assurances of my highest consideration.

Taïeb Chérif
Secretary General

Under separate cover:
Interim edition of Amendment 3 to the PANS-ATM

AMENDMENT No. 3

TO THE

PROCEDURES
FOR
AIR NAVIGATION SERVICES

AIR TRAFFIC MANAGEMENT

(Doc 4444)

INTERIM EDITION

The text of Amendment No. 3 to the PANS-ATM (Doc 4444) was approved by the President of the Council of ICAO on behalf of the Council on **29 June 2004** for applicability on **25 November 2004**. This interim edition is distributed to facilitate implementation of the amendment by States. Replacement pages incorporating Amendment No. 3 are expected to be distributed in October 2004.

JULY 2004

INTERNATIONAL CIVIL AVIATION ORGANIZATION

NOTES ON THE PRESENTATION OF THE AMENDMENT TO THE PANS-ATM

The text of the amendment is arranged to show deleted text with a line through it and new text highlighted with grey shading, as shown below:

1. ~~Text to be deleted is shown with a line through it.~~	text to be deleted
2. New text to be inserted is highlighted with grey shading.	new text to be inserted
3. ~~Text to be deleted is shown with a line through it~~ followed by the replacement text which is highlighted with grey shading.	new text to replace existing text

PROCEDURES FOR AIR NAVIGATION SERVICES — AIR TRAFFIC MANAGEMENT
(PANS-ATM, DOC 4444)

FOURTEENTH EDITION

CHAPTER 1. DEFINITIONS

. . .

Ground visibility. The visibility at an aerodrome as reported by an accredited observer or automatic systems.

Runway incursion. Any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle or person on the protected area of a surface designated for the landing and take-off of aircraft.

Visibility. Visibility for aeronautical purposes is the greater of:

. . .

~~*Note*~~ *Note 1.— The two distances have different values in air of a given extinction coefficient, and the latter b) varies with the background illumination. The former a) is represented by the meteorological optical range (MOR).*

Note 2. —The definition applies to the observations of visibility in local routine and special reports, to the observations of prevailing and minimum visibility reported in METAR and SPECI and to the observations of ground visibility.

. . .

CHAPTER 4. GENERAL PROVISIONS FOR AIR TRAFFIC SERVICES

. . .

4.12.6 Forwarding of meteorological information

4.12.6.1 When receiving ADS reports which contain a meteorological information block, air traffic services units shall relay the basic ADS and meteorological information blocks without delay to the world area forecast centres (WAFCs) ~~and, as appropriate, to regional area forecast centres (RAFCs)~~.

4.12.6.2 When receiving special air-reports by data link communications, air traffic services units shall forward them without delay to their associated meteorological watch office~~;~~ and the WAFCs ~~and, as appropriate, to RAFCs~~.

. . .

CHAPTER 7. PROCEDURES FOR AERODROME CONTROL SERVICE

. . .

7.3.1.4 RUNWAY INCURSION OR OBSTRUCTED RUNWAY

7.3.1.4.1 In the event the aerodrome controller ~~observes~~, after a take-off clearance or a landing clearance has been issued, becomes aware of a runway incursion or the imminent occurrence thereof, or the existence of any obstruction on or in close proximity to the runway likely to impair the safety of an aircraft taking off or landing, ~~such as a runway incursion by an aircraft or vehicle, or animals or flocks of birds on the runway;~~ appropriate action shall be taken as follows:

a) ~~in all cases inform the aircraft concerned of the obstruction and its location on the runway;~~ cancel the take-off clearance for a departing aircraft;

b) ~~cancel the take-off clearance for an aircraft which has not started to roll;~~ instruct a landing aircraft to execute a go-around or missed approach;

c) ~~instruct a landing aircraft to go around.~~ in all cases inform the aircraft of the runway incursion or obstruction and its location in relation to the runway.

Note.— Animals and flocks of birds may constitute an obstruction with regard to runway operations. In addition, an aborted take-off or a go-around executed after touchdown may expose the aeroplane to the risk of overrunning the runway. Moreover, a low altitude missed approach may expose the aeroplane to the risk of a tail strike. Pilots may, therefore, have to exercise their judgement in accordance with Annex 2, 2.4 concerning the authority of the pilot-in-command of an aircraft.

7.3.1.4.2 Following any occurrence involving an obstruction on the runway or a runway incursion, pilots and controllers shall complete an air traffic incident report in accordance with the ICAO model air traffic incident report form.

. . .

CHAPTER 9. FLIGHT INFORMATION SERVICE AND ALERTING SERVICE

9.1 Flight information service

9.1.3 Transmission of information

. . .

9.1.3.2 *Transmission of special air-reports, SIGMET and AIRMET information*

9.1.3.2.1 Appropriate SIGMET and AIRMET information, as well as special air-reports which have not been used for the preparation of a SIGMET, shall be disseminated to aircraft by one or more of the means specified in 9.1.3.1.1 above as determined on the basis of regional air navigation agreements. Special air-reports shall be disseminated to aircraft for a period of 60 minutes after their issuance.

. . .

CHAPTER 11. AIR TRAFFIC SERVICES MESSAGES

. . .

11.4.3 Flight information messages

. . .

11.4.3.2.3.2.3 In ~~meteorological reports disseminated beyond the aerodrome~~ METAR and SPECI, the visibility shall be representative of the aerodrome and its ~~immediate~~ vicinity. In the case of significant directional variations in visibility:

a) the ~~lowest~~ prevailing visibility shall be reported; and

b) ~~additional values~~ the lowest visibility shall be ~~given~~ reported with an indications of the direction of observation.

. . .

CHAPTER 12. PHRASEOLOGIES

12.2 GENERAL

. . .

12.2.3 Section 12.3 includes phrases for use by pilots, ATS personnel and other ground personnel. ~~Phraseologies for the movement of vehicles, other than tow-tractors, on the manoeuvring area are not listed separately as the phraseology associated with the movement of aircraft is applicable, with the exception of taxi instructions, in which case the word "PROCEED" shall be substituted for the word "TAXI" when communicating with vehicles.~~

12.2.4 During operations in or vertical transit through reduced vertical separation minimum (RVSM) airspace with aircraft not approved for RVSM operations, pilots shall report non-approved status in accordance with 12.3.1.11 c) as follows:

a) at initial call on any channel within RVSM airspace;

b) in all requests for level changes; and

c) in all read-backs of level clearances.

12.2.5 Air traffic controllers shall explicitly acknowledge receipt of messages from aircraft reporting RVSM non-approved status.

12.2.6 Phraseologies for the movement of vehicles, other than tow-tractors, on the manoeuvring area shall be the same as those used for the movement of aircraft, with the exception of taxi instructions, in which case the word "PROCEED" shall be substituted for the word "TAXI" when communicating with vehicles.

. . .

12.3 ATC PHRASEOLOGIES

12.3.1 General

...

	Circumstances	*Phraseologies*
12.3.1.4	8.33 KHz CHANNEL SPACING *Note.— In this paragraph, the term "point" is used only in the context of naming the 8.33 kHz channel spacing concept and does not constitute any change to existing ICAO provisions or phraseology regarding the use of the term "decimal".*	
	... to request confirmation of 8.33 kHz capability	a) CONFIRM EIGHT POINT THREE THREE
	... to indicate 8.33 kHz capability	*b) AFFIRM EIGHT POINT THREE THREE
	... to indicate lack of 8.33 kHz capability	*c) NEGATIVE EIGHT POINT THREE THREE
	... to request UHF capability	d) CONFIRM UHF
	... to indicate UHF capability	*e) AFFIRM UHF
	... to indicate lack of UHF capability	*f) NEGATIVE UHF
	... to request status in respect of 8.33 kHz exemption	g) CONFIRM EIGHT POINT THREE THREE EXEMPTED
	... to indicate 8.33 kHz exempted status	*h) AFFIRM EIGHT POINT THREE THREE EXEMPTED
	... to indicate 8.33 kHz non-exempted status	*i) NEGATIVE EIGHT POINT THREE THREE EXEMPTED
	... to indicate that a certain clearance is given because otherwise a non-equipped and/or non-exempted aircraft would enter airspace of mandatory carriage	j) DUE EIGHT POINT THREE THREE REQUIREMENT
		* Denotes pilot transmission

12.3 ATC PHRASEOLOGIES

12.3.1 General

...

	Circumstances	*Phraseologies*
12.3.1.4	8.33 KHz CHANNEL SPACING *Note.— In this paragraph, the term "point" is used only in the context of naming the 8.33 kHz channel spacing concept and does not constitute any change to existing ICAO provisions or phraseology regarding the use of the term "decimal".*	
	... to request confirmation of 8.33 kHz capability	a) CONFIRM EIGHT POINT THREE THREE
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	... to indicate lack of 8.33 kHz capability	*c) NEGATIVE EIGHT POINT THREE THREE
	... to request UHF capability	d) CONFIRM UHF
	... to indicate UHF capability	*e) AFFIRM UHF
	... to indicate lack of UHF capability	*f) NEGATIVE UHF
	... to request status in respect of 8.33 kHz exemption	g) CONFIRM EIGHT POINT THREE THREE EXEMPTED
	... to indicate 8.33 kHz exempted status	*h) AFFIRM EIGHT POINT THREE THREE EXEMPTED
	... to indicate 8.33 kHz non-exempted status	*i) NEGATIVE EIGHT POINT THREE THREE EXEMPTED
	... to indicate that a certain clearance is given because otherwise a non-equipped and/or non-exempted aircraft would enter airspace of mandatory carriage	j) DUE EIGHT POINT THREE THREE REQUIREMENT
		* Denotes pilot transmission

Renumber remaining paragraphs accordingly.

. . .

	Circumstances	*Phraseologies*
12.3.1.8	ADDITIONAL REPORTS	a) REPORT PASSING *(significant point)*;
	... to request a report at a specified place or distance	b) REPORT *(distance)* FROM *(name of DME station)* DME *(or significant point)*;
		c) REPORT PASSING *(three digits)* RADIAL *(name of VOR)* VOR;
	... to request a report of present position	d) REPORT DISTANCE FROM *(significant point)*;
		e) REPORT DISTANCE FROM *(name of DME station)* DME.
. . .		
12.3.1.10	OPERATIONAL STATUS OF VISUAL AND NON-VISUAL AIDS	a) *(specify visual or non-visual aid)* RUNWAY *(number) (description of deficiency)*;
		b) *(type)* LIGHTING *(unserviceability)*;
		c) GBAS/SBAS/MLS/ILS CATEGORY *(category) (serviceability state)*;
		d) TAXIWAY LIGHTING *(description of deficiency)*;
		e) *(type of visual approach slope indicator)* RUNWAY *(number) (description of deficiency)*.
12.3.1.11	REDUCED VERTICAL SEPARATION MINIMUM (RVSM) OPERATIONS	
	... to ascertain RVSM approval status of an aircraft	a) CONFIRM RVSM APPROVED
	... to report RVSM approved status	*b) AFFIRM RVSM
	... to report RVSM non-approved status followed by supplementary information	*c) NEGATIVE RVSM [*(supplementary information, e.g. State Aircraft)*]
	Note.— See 12.2.4 and 12.2.5 for procedures relating to operations in RVSM airspace by aircraft with non-approved status.	

12.3.1.13	DEGRADATION OF AIRCRAFT NAVIGATION PERFORMANCE	UNABLE RNP *(specify type)* (*or* RNAV) [DUE TO *(reason e.g.* LOSS of RAIM *or* RAIM ALERT)].

. . .

12.3.2.4	SPECIFICATION OF CRUISING LEVELS	a) CROSS *(significant point)* AT (*or* ABOVE, *or* BELOW) *(level)*; b) CROSS *(significant point)* AT *(time)* OR LATER (*or* BEFORE) AT *(level)*; c) CRUISE CLIMB BETWEEN *(levels)* (*or* ABOVE *(level)*); d) CROSS *(distance)* DME [*(direction)*] OF *(name of DME station)* (*or (distance)* [*(direction)*] OF *(significant point)*) AT (*or* ABOVE *or* BELOW) *(level)*.

12.3.5 Coordination between ATS units

. . .

12.3.5.8	REDUCED VERTICAL SEPARATION MINIMUM (RVSM) OPERATIONS	
... to verbally supplement estimate messages of aircraft non-approved for RVSM or to verbally supplement an automated estimate message exchange that does not automatically transfer information from Item 18 of the flight plan followed by supplementary information, as appropriate		a) NEGATIVE RVSM [(*supplementary information, e.g. State Aircraft*)]
... to communicate the cause of a contingency relating to an aircraft that is unable to conduct RVSM operations due to severe turbulence or other severe meteorological phenomena or equipment failure, as applicable		b) UNABLE RVSM DUE TURBULENCE (*or* EQUIPMENT, as *applicable*)

. . .

12.4 RADAR PHRASEOLOGIES

. . .

12.4.2 Radar in approach control service

12.4.2.2 VECTORING FOR ILS AND OTHER PILOT-INTERPRETED AIDS

... when a pilot wishes to be positioned a specific distance from touchdown

... instructions and information

a) POSITION *(number)* KILOMETRES (*or* MILES) from *(fix)*. TURN LEFT (*or* RIGHT) HEADING *(three digits)*;

b) YOU WILL INTERCEPT *(radio aid or track) (distance)* FROM (*significant point or* TOUCHDOWN);

•c) REQUEST *(distance)* FINAL;

d) CLEARED FOR *(type of approach)* APPROACH RUNWAY *(number)*;

e) ~~REPORT ESTABLISHED [ON MLS APPROACH TRACK] *or* [ON ILS (LOCALIZER) *or* (GLIDE PATH)]~~REPORT ESTABLISHED ON [ILS] LOCALIZER (*or* ON GBAS/SBAS/MLS APPROACH COURSE);

f) CLOSING FROM LEFT (*or* RIGHT) [REPORT ESTABLISHED];

g) TURN LEFT (*or* RIGHT) HEADING *(three digits)* [TO INTERCEPT] *or* [REPORT ESTABLISHED];

h) EXPECT VECTOR ACROSS *(localizer course or radio aid) (reason)*;

i) THIS TURN WILL TAKE YOU THROUGH *(localizer course or radio aid)* [*reason*];

j) TAKING YOU THROUGH *(localizer course or radio aid)* [*reason*];

k) MAINTAIN *(altitude)* UNTIL GLIDE PATH INTERCEPTION;

l) REPORT ESTABLISHED ON GLIDE PATH;

m) INTERCEPT *(localizer course or radio aid)* [REPORT ESTABLISHED].

• Denotes pilot transmission.

12.4.2.3	MANOEUVRE DURING INDEPENDENT AND DEPENDENT PARALLEL APPROACHES	a) CLEARED FOR ~~ILS (or MLS)~~*(type of approach)* APPROACH RUNWAY *(number)* LEFT (*or* RIGHT); b) YOU HAVE CROSSED THE LOCALIZER (*or* GBAS/SBAS/MLS FINAL APPROACH ~~TRACK~~COURSE). TURN LEFT (*or* RIGHT) IMMEDIATELY AND RETURN TO THE LOCALIZER (*or* GBAS/SBAS/MLS FINAL APPROACH ~~TRACK~~COURSE); c) ILS (*or* MLS) RUNWAY *(number)* LEFT (*or* RIGHT) LOCALIZER (*or* MLS) FREQUENCY IS *(frequency)*; d) TURN LEFT (*or* RIGHT) *(number)* DEGREES (*or* HEADING) *(three digits)* IMMEDIATELY TO AVOID TRAFFIC [DEVIATING FROM ADJACENT APPROACH], CLIMB TO *(altitude)*; e) CLIMB TO *(altitude)* IMMEDIATELY TO AVOID TRAFFIC [DEVIATING FROM ADJACENT APPROACH] (further instructions).
	... for avoidance action when an aircraft is observed penetrating the NTZ	
	... for avoidance action below 120 m (400 ft) above the runway threshold elevation where parallel approach obstacle assessment surfaces (PAOAS) criteria are being applied	

CHAPTER 16. MISCELLANEOUS PROCEDURES

. . .

16.3 AIR TRAFFIC INCIDENT REPORT

16.3.1 An air traffic incident report ~~should~~ shall be submitted, normally to the air traffic services unit concerned, for incidents specifically related to the provision of air traffic services involving such occurrences as aircraft proximity (AIRPROX), obstructions on runways, runway incursions, or other serious difficulty resulting in a hazard to aircraft, caused by, among others, faulty procedures, non-compliance with procedures, or failure of ground facilities.

APPENDIX 4. AIR TRAFFIC INCIDENT REPORT

1. ICAO model air traffic incident report form

AIR TRAFFIC INCIDENT REPORT FORM	
For use when submitting and receiving reports on air traffic incidents. In an initial report by radio, shaded items should be included.	
A — AIRCRAFT IDENTIFICATION	**B — TYPE OF INCIDENT** AIRPROX / **OBSTRUCTION ON RUNWAY/RUNWAY INCURSION** / PROCEDURE / FACILITY*

...

— END —

DRAFT AIP SUPPLEMENT

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RVSM Policy and Procedures in the Incheon FIR

1.0 Introduction

1.1 The International Civil Aviation Organization (ICAO) Third Asia/Pacific Regional Air Navigation Meeting (RAN/3) recommended that Reduced Vertical Separation Minimum (RVSM) should be introduced in the Asia and Pacific Region. This is due to the significant benefits to be gained by aircraft operators and air traffic services (ATS) providers. ICAO Document 9574, *Manual on Implementation of a 300 m (1 000 ft) Vertical Separation Minimum between FL 290 and FL 410 Inclusive* contains an explanation of RVSM.

1.2 Benefits to be gained from RVSM include:

(a) adoption of an ICAO endorsed navigation requirement;

(b) improved utilization of airspace for ATC conflict resolution;

(c) fuel savings of ≈ 1% for flight closer to optimum cruise altitude; and

(d) reduction in ground delays.

1.3 CONTENT. The ICAO Asia/Pacific RVSM Task Force has harmonized the basic content of this document. The following policies are addressed in the paragraphs of this document:

2.0 Identification of RVSM Airspace
3.0 Airworthiness and Operational Approval and Monitoring
4.0 ACAS II and Transponder Equipage
5.0 In-flight Procedures within RVSM Airspace
~~6.0 Special Procedures for In-flight Contingencies in Oceanic Airspace~~
~~7.0 In-flight Contingency Procedures for Subsonic Aircraft Requiring Rapid Descent, Turn-back or Diversion in Oceanic Airspace~~
~~8.0 Weather Deviation Procedures~~
~~9.0 Special Procedures to Mitigate Wake Turbulence Encounters and Distracting Aircraft System Alerts in the Oceanic Airspace~~
10.0 Transition Areas
11.0 Flight Planning Requirements
12.0 Procedures for Operation of Non-RVSM Compliant Aircraft in RVSM Airspace
13.0 Delivery Flights for Aircraft that are RVSM Compliant on Delivery
14.0 Procedures for Suspension of RVSM
15.0 Guidance for Pilot and Controller for Actions in Event of Aircraft System Malfunction or Turbulence Greater than Moderate
16.0 Procedures for Air-Ground Communication Failure

2.0 Identification of RVSM Airspace

2.1 RVSM airspace is prescribed within the Incheon FIR within controlled airspace between FL 290 and FL 410 (inclusive).

3.0 Airworthiness and Operational Approval and Monitoring

3.1 APPROVAL DATE. Operator/aircraft approval by 24 November 2005 will enable air traffic service providers to plan for orderly RVSM implementation.

3.2 APPROVAL PROCESS. (Source Document: FAA Interim Guidance (IG) 91-RVSM/JAA TGL #6) Operators must obtain airworthiness and operational approval from the State of Registry or State of the Operator, as appropriate, to conduct RVSM operations. On behalf of the ICAO Asia and Pacific Office, the FAA is maintaining a website containing documents and policy for RVSM approval. The Internet address is: **http://www.faa.gov/ats/ato/rvsm1.htm.** In the "RVSM Documentation" section, under "Documents Applicable to All RVSM Approvals", the "Aircraft/Operator Approval Events Outlines" for US and Non-US Operators provides an outline of approval process tasks with references to related documents.

3.3 AIRCRAFT MONITORING. (Source Document: IG 91-RVSM/TGL #6, Pacific Minimum Monitoring Requirements) Operators are required to participate in the RVSM aircraft monitoring program. This is an essential element of the RVSM implementation program in that it confirms that the aircraft altitude-keeping performance standard is being met. The _____ will process the results of monitoring. For further information on RVSM monitoring, the PARMO web site can be accessed by accessing the "RVSM Documentation" section of the FAA RVSM website and clicking on the link to the PARMO website.

3.3.1 Monitoring accomplished for other regions can be used to fulfill the monitoring requirements for the Asia/Pacific Region. The PARMO or MAAR will coordinate with other monitoring agencies to access this information.

3.3.1.1 For monitoring services in the Asia/Pacific Region, operators should contact the PARMO monitoring contractors as follows:

Phone: +1-202-863-2175
Fax: +1-202-862-2398
Email: monitor@cssiinc.com

3.3.1.2 Additionally, MAAR also provides the monitoring services. The contact addresses are as follows:

Phone: +66-2-287-8154
Fax: +66-2-287-8155
Email: maar@aerothai.co.th

4.0 ACAS II and Transponder Equipage

4.1 The ICAO Asia/Pacific RVSM Implementation Task Force recommends that those aircraft equipped with ACAS and operated in RVSM airspace be equipped with ACAS II. (TCAS II systems with Version 7.0 incorporated meet ICAO ACAS II standards).

4.1.1 Operators must take action to inform themselves of ACAS II equipage requirements and plan for compliance. ICAO and individual States have established policies requiring ACAS II equipage and schedules for compliance. In addition, the APANPIRG has endorsed early ACAS II equipage in the region.

~~4.2 INTERNATIONAL GENERAL AVIATION (IGA) TRANSPONDER EQUIPAGE. ICAO Annex 6, Part II, states that, starting x Month 2005, IGA airplanes shall be equipped with a pressure altitude reporting transponder certified by the appropriate State authority as meeting the provisions of Annex 10.~~

5.0 In-flight Procedures within RVSM Airspace

5.1 Before entering RVSM airspace, the pilot should review the status of required equipment (see Appendix 4 of FAA IG 91-RVSM for pilot RVSM procedures). The following equipment should be operating normally:

(a) two primary altimetry systems;

(b) one automatic altitude-keeping device; and

(c) one altitude-alerting device.

5.2 See Attachment A to this AIP Supplement or Appendix 5 of FAA IG 91-RVSM for pilot and controller actions in contingencies. The pilot must notify ATC whenever the aircraft:

(a) is no longer RVSM compliant due to equipment failure; or

(b) experiences loss of redundancy of altimetry systems; or

(c) encounters turbulence that affects the capability to maintain flight level.

5.3 TRANSITION BETWEEN FL's. (Source Document: 91-RVSM/TGL #6) During cleared transition between levels, the aircraft should not overshoot or undershoot the assigned FL by more than 150 ft (45 m).

5.4 PILOT LEVEL CALL (Source Document: State AIP Supplement) Except in ~~an ADS or~~ radar environment, pilots shall report reaching any altitude assigned within RVSM airspace.

~~5.5 CONTINGENCY PROCEDURES. (Source Document: State AIP Supplement) Paragraphs 6.0, 7.0, 8.0 and 9.0 below contain procedures for in-flight contingencies that have been updated for RVSM operations. The contingency procedures in paragraphs 6.0 7.0 and the off-set procedures in paragraph 9.0 should be applied in Oceanic operations. The weather deviation procedures in paragraph 8.0 may be applied in all airspace in the region.~~

6.0 Special Procedures for In-flight Contingencies in Oceanic Airspace in the ____FIR (Source Document: State AIP Supplement)

(NOTE THIS PROCEDURE APPLIES IN OCEANIC AIRSPACE AND NOT IN RADAR AIRSPACE)

General procedures

6.1 The following general procedures apply to both subsonic and supersonic aircraft and are intended as guidance only. Although all possible contingencies cannot be covered, they provide for cases of inability to maintain assigned level due to:

(a) weather;

(b) aircraft performance;

(c) pressurization failure; and

(d) problems associated with high-level supersonic flight.

6.2 The procedures are applicable primarily when rapid descent and/or turn-back or diversion to an alternate airport is required. **The pilot's judgment shall determine the sequence of actions to be taken, taking into account specific circumstances.**

6.3 If an aircraft is unable to continue flight in accordance with its air traffic control clearance, a revised clearance shall, whenever possible, be obtained prior to initiating any action, using a distress or urgency signal as appropriate.

6.4 If prior clearance cannot be obtained, an ATC clearance shall be obtained at the earliest possible time and, until a revised clearance is received, the pilot shall:

(a) if possible, deviate away from an organized track or route system;

(b) establish communications with and alert nearby aircraft by broadcasting, at suitable intervals: flight identification, flight level, aircraft position, (including the ATS route designator or the track code) and intentions on the frequency in use, as well as on frequency 121.5 MHz (or, as a back up, the VHF inter-pilot air-to-air frequency 123.45);

(c) watch for conflicting traffic both visually and by reference to ACAS (if equipped); and

(d) turn on all aircraft exterior lights (commensurate with appropriate operating limitations).

7.0 In-flight Contingency Procedures for Subsonic Aircraft Requiring Rapid Descent, Turn-Back or Diversion in Oceanic Airspace in the ____FIR. (Source Document: State AIP Supplement)

(NOTE THIS PROCEDURE APPLIES IN OCEANIC AIRSPACE AND NOT IN RADAR AIRSPACE)

Initial action

7.1 If unable to comply with the provisions of paragraph 6.3 to obtain a revised ATC clearance, the aircraft should leave its assigned route or track by turning 90 degrees right or left whenever this is possible. The direction of the turn should be determined by the position of the aircraft relative to any organized route or track system (for example, whether the aircraft is outside, at the edge of, or within the system). Other factors to consider are terrain clearance and the levels allocated to adjacent routes or tracks.

Subsequent action

7.2 AIRCRAFT ABLE TO MAINTAIN LEVEL. An aircraft able to maintain its assigned level should acquire and maintain in either direction a track laterally separated by 25 NM from its assigned route or track and once established on the offset track, climb or descend 500 ft (150 m).

7.3 AIRCRAFT UNABLE TO MAINTAIN LEVEL. An aircraft NOT able to maintain its assigned level should, whenever possible, minimize its rate of descent while turning to acquire and maintain in either direction a track laterally separated by 25 NM from its assigned route or track. For subsequent level flight, a level should be selected which differs by 500 ft (150 m) from those normally used.

7.4 DIVERSION ACROSS THE FLOW OF ADJACENT TRAFFIC. Before commencing a diversion across the flow of adjacent traffic, the aircraft should, while maintaining the 25 NM offset, expedite climb above or descent below levels where the majority of aircraft operate (*e.g.*, *to a level above FL 400 or below FL 290*) and then maintain a level which differs by 500 ft (150 m) from those normally used. However, if the pilot is unable or unwilling to carry out a major climb or descent, the aircraft should be flown at a level 500 ft above or below levels normally used until a new ATC clearance is obtained.

7.5 ETOPS AIRCRAFT. If these contingency procedures are employed by a twin-engine aircraft as a result of an engine shutdown or a failure of an ETOPS critical system, the pilot should advise ATC as soon as practicable of the situation, reminding ATC of the type of aircraft involved and requesting expeditious handling.

8.0 Weather Deviation Procedures in the ____FIR.
(Source Document: State AIP Supplement)

(NOTE THIS PROCEDURE APPLIES IN OCEANIC AIRSPACE AND NOT IN RADAR AIRSPACE)

General procedures

8.1 The following procedures are intended to provide guidance. All possible circumstances cannot be covered. The pilot's judgment shall ultimately determine the sequence of actions taken and ATC shall render all possible assistance.

8.2 If the aircraft is required to deviate from track to avoid weather and prior clearance cannot be obtained, an air traffic control clearance shall be obtained at the earliest possible time. In the meantime, the aircraft shall follow the procedures detailed in paragraph 8.9 below.

8.3 The pilot shall advise ATC when weather deviation is no longer required, or when a weather deviation has been completed and the aircraft has returned to the centerline of its cleared route.

8.4 When the pilot initiates communications with ATC, rapid response may be obtained by stating "WEATHER DEVIATION REQUIRED" to indicate that priority is desired on the frequency and for ATC response.

8.5 The pilot still retains the option of initiating the communications using the urgency call "PAN PAN" to alert all listening parties to a special handling condition, which may receive ATC priority for issuance of a clearance or assistance.

8.6 When controller-pilot communications are established, the pilot shall notify ATC and request clearance to deviate from track, advising, when possible, the extent of the deviation expected. ATC will take one of the following actions:

(a) if there is no conflicting traffic in the horizontal dimension, ATC will issue clearance to deviate from track; or

(b) if there is conflicting traffic in the horizontal dimension, ATC will separate aircraft by establishing vertical separation or, if unable to establish vertical separation, ATC shall:

i) advise the pilot unable to issue clearance for requested deviation
i) advise pilot of conflicting traffic
iii) request pilot's intentions

SAMPLE PHRASEOLOGY:
"Unable (requested deviation), traffic is (call sign, position, altitude, direction), advise intentions."

8.7 The pilot will take the following actions:

(a) Advise ATC of intentions by the most expeditious means available.

(b) Comply with air traffic control clearance issued or…

(c) Execute the procedures detailed in 8.9 below. (ATC will issue essential traffic information to all affected aircraft).

(d) If necessary, establish voice communications with ATC to expedite dialogue on the situation

Actions to be taken if a revised air traffic control clearance cannot be obtained

8.8 The pilot shall take the actions listed below under the provision that the pilot may deviate from rules of the air (e.g., the requirement to operate on route or track center line unless otherwise directed by ATC), when it is absolutely necessary in the interests of safety to do so.

8.9 ***If a revised air traffic control clearance cannot be obtained*** and deviation from track is required to avoid weather, the pilot shall take the following actions:

(a) if possible, deviate away from an organized track or route system;

(b) establish communication with and alert nearby aircraft by broadcasting, at suitable intervals: flight identification, flight level, aircraft position (including the ATS route

designator or the track code) and intentions (including the magnitude of the deviation expected) on the frequency in use, as well as on frequency 121.5 MHz (or, as a back-up, the VHF inter-pilot air-to-air frequency 123.45).

(c) watch for conflicting traffic both visually and by reference to ACAS (if equipped);

(d) turn on ***all*** aircraft exterior lights (commensurate with appropriate operating limitations);

(e) for deviations of less than 10NM**,** aircraft should remain at the level assigned by ATC;

(f) ***for deviations of greater than 10NM,*** when the aircraft is approximately 10 NM from track, initiate a level change based on the following criteria:

Route center line track	Deviations >10 NM	Level change
EAST 000-179 magnetic	LEFT RIGHT	***DESCEND 300 ft*** ***CLIMB 300 ft***
WEST 180-359 magnetic	LEFT RIGHT	***CLIMB 300 ft*** ***DESCEND 300 ft***

Note: 8.9 (b) and (c) above calls for the pilot to: broadcast aircraft position and pilot's intentions, identify conflicting traffic and communicate air-to-air with near-by aircraft. If the pilot determines that there is another aircraft at or near the same FL with which his aircraft might conflict, then the pilot is expected to adjust the path of the aircraft, as necessary, to avoid conflict.

(g) if contact was not established prior to deviating, continue to attempt to contact ATC to obtain a clearance. If contact was established, continue to keep ATC advised of intentions and obtain essential traffic information.

(h) when returning to track, be at its assigned flight level, when the aircraft is within approximately 10NM of center line.

9.0 Special Procedures to Mitigate Wake Turbulence Encounters and Distracting Aircraft System Alerts in the Oceanic Airspace of the _____ FIR (Source Document: State AIP Supplement)

(NOTE: TO BE REVIEWED IN LIGHT OF REVISIONS TO ICAO GUIDELINES FOR LATERAL OFFSET PROCEDURE ALSO THIS PROCEDURE DOES NOT APPLY IN RADAR AIRSPACE)

9.1 The following special procedures are applicable to mitigate wake turbulence or distracting aircraft system alerts (e.g., ACAS, Ground Proximity Warning System (GPWS)) in Asia and Pacific airspace where RVSM is applied:

~~NOTE: in the contingency circumstances below, ATC will not issue clearances for lateral offsets and will not normally respond to actions taken by the pilots.~~

~~9.2 An aircraft that encounters wake vortex turbulence or experiences distracting aircraft system alerts shall notify ATC and request a flight level, track or speed change to avoid the condition. However, in situations where such a change is not possible or practicable, the pilot may initiate the following temporary lateral offset procedure with the intention of returning to center line as soon as practicable:~~

~~(a) the pilot should establish contact with other aircraft, if possible, on the appropriate VHF inter-pilot air to air frequency; 123.45 MHz, and~~

~~(b) one (or both) aircraft may initiate lateral offset(s) not to exceed 2 NM from the assigned track, provided that:~~

~~i) as soon as practicable to do so, the offsetting aircraft notify ATC that ***temporary*** lateral offset action has been taken and specify the reason for doing so *(ATC will not normally respond)*; and~~

~~ii) the offsetting aircraft notify ATC when re-established on assigned route(s) or track(s) *(ATC will not normally respond).*~~

10.0 Transition Areas (Source Document: State AIP Supplement)

10.1 Transition areas and procedures for transition from RVSM to non-RVSM airspace within the Incheon FIR are identified in_____.

11.0 Flight Planning Requirements (Source Document: State AIP Supplement)

11.1 Unless special arrangement is made as detailed below, RVSM approval is required for operators and aircraft to operate within designated RVSM airspace. The operator must determine that the appropriate State authority has granted them RVSM operational approval and they will meet the RVSM requirements for the filed route of flight and any planned alternate routes. The letter "W" shall be inserted in item 10 (Equipment) of the ICAO standard flight plan to indicate that both the aircraft and operator are RVSM approved.

12.0 Procedures for Operation of Non-RVSM Compliant Aircraft in RVSM Airspace (Source Document: State AIP Supplement)

12.1 FLIGHT PRIORITY. It should be noted that RVSM approved aircraft will be given priority for level allocation over non-RVSM approved aircraft.

12.2 VERTICAL SEPARATION APPLIED. The vertical separation minimum between non-RVSM aircraft operating in the RVSM stratum and all other aircraft is 2,000 ft.

12.3 PHRASEOLGY. ~~Non-RVSM compliant aircraft operating in RVSM airspace should use the phraseology contained in Attachment B.~~Phraseologies to be used for RVSM operations are listed in Chapter 12 of the PANS-ATM.

12.4 CONTINUOUS CLIMB/DESCENT OF NON-COMPLIANT AIRCRAFT THROUGH RVSM AIRSPACE (Source Document: State AIP Supplement). Non-RVSM compliant aircraft may be cleared to climb to and operate above FL 410 or descend to and operate below FL 290 provided that they:

a) Do not climb or descend at less than the normal rate for the aircraft and

b) Do not level off at an intermediate level while passing through the RVSM stratum.

12.5 SPECIAL COORDINATION PROCEDURES FOR CRUISE OPERATION OF NON-RVSM COMPLIANT AIRCRAFT IN RVSM AIRSPACE (Source : State AIP Supplement). Non-RVSM compliant aircraft may not flight plan between FL 290 and FL 410 inclusive within RVSM airspace. After special coordination as detailed in 12.5.1 below, the following non-RVSM aircraft may flight plan at RVSM flight levels in the RVSM stratum:

(a) Is being initially delivered to the State of Registry or Operator (see Paragraph 13.0 for additional details and information); or

(b) was formally RVSM approved but has experienced an equipment failure and is being flown to a maintenance facility for repair in order to meet RVSM requirements and/or obtain approval; or

(c) is transporting a spare engine mounted under the wing; or

(d) is being utilized for mercy or humanitarian purposes; or

(e) State aircraft (those aircraft used in military, custom and police services shall be deemed state aircraft)

12.5.1 Aircraft operators requesting approval as above shall:

(a) if departing within Incheon FIR, obtain approval from Incheon Center normally not more than 72 hours and not less than 4 hours prior to intended departure time. The Incheon Center will provide notification of approval via Telephone, AFTN, FAX or email as appropriate; or

(b) if transiting Inchoen FIR, obtain approval from the first RVSM affected Center.

(c) Included the “STS/APVD NONRVSM” in Field 18 of the ICAO Flight Plan.

(NOTE: APPROVAL MEANS ABLE TO OPERATE IN THE RVSM STRATUM. AIRCRAFT CRUISING LEVELS WILL BE SUBJECT TO AIR TRAFFIC CONTROL.)

12.5.2 Contact details for approval request are as follows:

Incheon Center –
Telephone:
AFTN:
FAX:
E-Mail:

12.5.3 This approval process is intended exclusively for the purposes indicated above and not as a means to circumvent the normal RVSM approval process.

13.0 Delivery Flights for Aircraft that are RVSM Compliant on Delivery (Source Document: State AIP Supplement)

13.1 An aircraft that is RVSM compliant on delivery may operate in RVSM airspace provided that the crew is trained on RVSM policies and procedures applicable in the airspace and the responsible State issues the operator a letter of authorization approving the operation. State notification to the ???APARMO??? should be in the form of a letter, e-mail or fax documenting the one-time flight. The planned date of the flight, flight identification, registration number and aircraft type/series should be included. Email address is ____. Fax number is ____.

14.0 Procedures for Suspension of RVSM (Source Document: State AIP Supplement)

14.1 Air traffic services will consider suspending RVSM procedures within affected areas of the Incheon FIR when there are pilot reports of greater than moderate turbulence. Within areas where RVSM procedures are suspended, the vertical separation minimum between all aircraft will be 2,000 ft.

15.0 Guidance for Pilots and Controllers for Actions in the Event of Aircraft System Malfunction or Turbulence Greater than Moderate (Source Document: State AIP Supplement)

15.1 See Attachment ~~A~~ for guidance in these circumstances.

16.0 Procedures for Air-Ground Communication Failure (Source Document: State AIP Supplement)

16.1 The air-ground communication failure procedures specified in ICAO PANS-RAC Doc 4444 should be applied~~, in conjunction with AIP (XXXX)~~.

ATTACHMENT ~~A~~

CONTINGENCY SCENARIOS. The following paragraphs summarize pilot actions to mitigate the potential for conflict with other aircraft in certain contingency situations. They should be reviewed in conjunction with the expanded contingency scenarios detailed on pages ____ which contain additional technical and operational detail.

***Scenario 1: The pilot is: 1) unsure of the vertical position of the aircraft due to the loss or degradation of all primary altimetry systems, or 2) unsure of the capability to maintain cleared flight level (CFL) due to turbulence or loss of all automatic altitude control systems.**

The Pilot should:	**ATC can be expected to:**
Maintain CFL while evaluating the situation;	
Watch for conflicting traffic both visually and by reference to ACAS, if equipped;	
If considered necessary, alert nearby aircraft by 1) making maximum use of exterior lights; 2) broadcasting position, FL, and intentions on 121.5 MHz (as a back-up, the VHF inter-pilot air-to-air frequency, 123.45MHz, may be used).	
Notify ATC of the situation and intended course of action. Possible courses of action include:	Obtain the pilot's intentions and pass essential traffic information.
1) maintaining the CFL and route provided that ATC can provide lateral, longitudinal or conventional vertical separation.	1) If the pilot intends to continue in RVSM airspace, assess traffic situation to determine if the aircraft can be accommodated through the provision of lateral, longitudinal, or conventional vertical separation, and if so, apply the appropriate minimum.
2) requesting ATC clearance to climb above or descend below RVSM airspace if the aircraft cannot maintain CFL and ATC cannot establish adequate separation from other aircraft.	2) If the pilot requests clearance to exit RVSM airspace, accommodate expeditiously, if possible.
3) executing the contingency maneuver shown in paragraphs 6.0 and 7.0 of this AIP Supplement to offset from the assigned track and FL, if ATC clearance cannot be obtained and the aircraft cannot maintain CFL.	3) If adequate separation cannot be established and it is not possible to comply with the pilot's request for clearance to exit RVSM airspace, advise the pilot of essential traffic information, notify other aircraft in the vicinity and continue to monitor the situation.
	4) Notify adjoining ATC facilities/sectors of the situation.

Scenario 2: There is a failure or loss of accuracy of one primary altimetry system (e.g., greater than 200 foot difference between primary altimeters)

The Pilot should
Cross check standby altimeter, confirm the accuracy of a primary altimeter system and notify ATC of the loss of redundancy. If unable to confirm primary altimeter system accuracy, follow pilot actions listed in the preceding scenario.

EXPANDED EQUIPMENT FAILURE AND TURBULENCE ENCOUNTER SCENARIOS. Operators may consider this material for use in training programs.

***Scenario 1: All automatic altitude control systems fail (e.g., Automatic Altitude Hold).**

The Pilot should	**ATC can be expected to**
Initially	
Maintain CFL	
Evaluate the aircraft's capability to maintain altitude through manual control.	
Subsequently	
Watch for conflicting traffic both visually and by reference to ACAS, if equipped.	
If considered necessary, alert nearby aircraft by 1) making maximum use of exterior lights; 2) broadcasting position, FL, and intentions on 121.5MHz (as a back-up, the VHF inter-pilot air-to-air frequency, 123.45MHz, may be used.)	
Notify ATC of the failure and intended course of action. Possible courses of action include:	
1) maintaining the CFL and route, provided that the aircraft can maintain level.	1) If the pilot intends to continue in RVSM airspace, assess traffic situation to determine if the aircraft can be accommodated through the provision of lateral, longitudinal, or conventional vertical separation, and if so, apply the appropriate minimum.
2) requesting ATC clearance to climb above or descend below RVSM airspace if the aircraft cannot maintain CFL and ATC cannot establish lateral, longitudinal or conventional vertical separation.	2) If the pilot requests clearance to exit RVSM airspace, accommodate expeditiously, if possible.
3) executing the contingency maneuver shown in paragraphs 6.0 and 7.0 of this AIP Supplement to offset from the assigned track and FL, if ATC clearance cannot be obtained and the aircraft cannot maintain CFL.	3) If adequate separation cannot be established and it is not possible to comply with the pilot's request for clearance to exit RVSM airspace, advise the pilot of essential traffic information, notify other aircraft in the vicinity and continue to monitor the situation.
	4) Notify adjoining ATC facilities/ sectors of the situation.

***Scenario 2: Loss of redundancy in primary altimetry systems**

The Pilot should	ATC can be expected to
If the remaining altimetry system is functioning normally, couple that system to the automatic altitude control system, notify ATC of the loss of redundancy and maintain vigilance of altitude keeping.	Acknowledge the situation and continue to monitor progress

Scenario 3: All primary altimetry systems are considered unreliable or fail

The Pilot should	ATC can be expected to
Maintain CFL by reference to the standby altimeter (if the aircraft is so equipped).	
Alert nearby aircraft by 1) making maximum use of exterior lights; 2) broadcasting position, FL, and intentions on 121.5 MHz (as a back-up, the VHF inter-pilot air-to-air frequency, 123.45MHz, may be used).	
Consider declaring an emergency. Notify ATC of the failure and intended course of action. Possible courses of action include:	Obtain pilot's intentions, and pass essential traffic information.
1) maintaining CFL and route provided that ATC can provide lateral, longitudinal or conventional vertical separation.	1) If the pilot intends to continue in RVSM airspace, assess traffic situation to determine if the aircraft can be accommodated through the provision of lateral, longitudinal, or conventional vertical separation, and if so, apply the appropriate minimum.
2) requesting ATC clearance to climb above or descend below RVSM airspace if ATC cannot establish adequate separation from other aircraft.	2) If the pilot requests clearance to exit RVSM airspace, accommodate expeditiously, if possible.
3) executing the contingency maneuver shown in paragraphs 6.0 and 7.0 of this AIP Supplement to offset from the assigned track and FL, if ATC clearance cannot be obtained.	3) If adequate separation cannot be established and it is not possible to comply with the pilot's request for clearance to exit RVSM airspace, advise the pilot of essential traffic information, notify other aircraft in the vicinity and continue to monitor the situation.
	4) Notify adjoining ATC facilities/sectors of the situation.

Scenario 4: The primary altimeters diverge by more than 200ft (60m)

The Pilot should
Attempt to determine the defective system through established trouble-shooting procedures and/or comparing the primary altimeter displace to the standby altimeter (as corrected by the correction cards, if required).
If the defective system can be determined, couple the functioning altimeter system to the altitude-keeping device.
If the defective system cannot be determined, follow the guidance in Scenario 3 for failure or unreliable altimeter indications of all primary altimeters.

***Scenario 5: Turbulence (greater than moderate) which the pilot believes will impact the aircraft's capability to maintain flight level.**

The Pilot should	**ATC can be expected to**
Watch for conflicting traffic both visually and by reference to ACAS, if equipped.	
If considered necessary, alert nearby aircraft by: 1) making maximum use of exterior lights; 2) broadcasting position, FL, and intentions on 121.5 MHz (as a back-up, the VHF inter-pilot air-to-air frequency, 123.45MHz, may be used).	
Notify ATC of intended course of action as soon as possible. Possible courses of action include:	
1) maintaining CFL and route provided ATC can provide lateral, longitudinal or conventional vertical separation.	1) Assess traffic situation to determine if the aircraft can be accommodated through the provision of lateral, longitudinal, or conventional vertical separation, and if so, apply the appropriate minimum.
2) requesting flight level change, if necessary.	2) If unable to provide adequate separation, advise the pilot of essential traffic information and request pilot's intentions.
3) executing the contingency maneuver shown in paragraphs 6.0 and 7.0 of this AIP Supplement to offset from the assigned track and FL, if ATC clearance cannot be obtained and the aircraft cannot maintain CFL.	3) Notify other aircraft in the vicinity and monitor the situation
	4) Notify adjoining ATC facilities/ sectors of the situation.

……..

ATTACHMENT B

Phraseology Related to RVSM Operations

Controller-pilot phraseology:

Message	Phraseology
For a controller to ascertain the RVSM approval status of an aircraft:	(call sign) **CONFIRM RVSM APPROVED**
For a pilot to report non-RVSM approval status: i. on the initial call on any frequency within the RVSM airspace (controllers shall provide a readback with this same phrase), and ii. in all requests for flight level changes pertaining to flight levels within the RVSM airspace; and iii. in all read-backs to flight level clearances pertaining to flight levels within the RVSM airspace. Additionally, except for State aircraft, pilots shall include this phrase to read back flight level clearances involving the vertical transit through FL 290 or FL 410. *See examples that follow.*	**NEGATIVE RVSM***
For a pilot to report RVSM approval status.	**AFFIRM RVSM***
For a pilot of a non-RVSM approved State aircraft to report non-RVSM approval status, in response to the phrase (call sign) **CONFIRM RVSM APPROVED.**	**NEGATIVE RVSM STATE AIRCRAFT***
Denial of clearance into the RVSM airspace:	(call sign) **UNABLE CLEARANCE INTO RVSM AIRSPACE, MAINTAIN** [or **DESCEND TO,** or **CLIMB TO**] **FLIGHT LEVEL** (number)
For a pilot to report when severe turbulence affects the aircraft's capability to maintain the height-keeping requirements for RVSM.	**UNABLE RVSM DUE TURBULENCE***
For a pilot to report that the aircraft's equipment has degraded enroute below that required for flight within the RVSM airspace. (See Attachment A) *(This phrase is to be used to convey both the initial indication of the non-MASPS compliance, and henceforth, on initial contact on all frequencies within the lateral limits of the RVSM airspace until such time as the problem ceases to exist, or the aircraft has exited the RVSM airspace.)*	**UNABLE RVSM DUE EQUIPMENT***

Message	Phraseology
For a pilot to report the ability to resume operations within the RVSM airspace after an equipment or weather-related contingency.	**READY TO RESUME RVSM***
For a controller to confirm that an aircraft has regained its RVSM approval status, or to confirm that the pilot is ready to resume RVSM operations.	**REPORT ABLE TO RESUME RVSM**

Example 1: A non-RVSM approved aircraft, maintaining FL 260, subsequently requests a climb to FL 320.
Pilot: (call sign) REQUEST FL 320, NEGATIVE RVSM
Controller: (call sign) CLIMB TO FL 320
Pilot: (call sign) CLIMB TO FL 320, NEGATIVE RVSM

Example 2: A non-RVSM approved aircraft, maintaining FL 260, subsequently requests a climb to FL 430.
Pilot: (call sign) REQUEST FL 430, NEGATIVE RVSM
Controller: (call sign) CLIMB TO FL 430
Pilot: (call sign) CLIMB TO FL 430, NEGATIVE RVSM

Example 3: A non-RVSM approved aircraft, maintaining FL 360, subsequently requests a climb to FL 380.
Pilot: (call sign) REQUEST FL 380, NEGATIVE RVSM
Controller: (call sign) CLIMB TO FL 380
Pilot: (call sign) CLIMB TO FL 380, NEGATIVE RVSM

Example 4: A non-RVSM approved civil aircraft maintaining FL 280, subsequently requests a climb to FL 320.
Pilot: (call sign) REQUEST FL 320, NEGATIVE RVSM
Controller: (call sign) UNABLE CLEARANCE INTO RVSM AIRSPACE, MAINTAIN FL 280

Coordination between ATS units:

Para	Message	Phraseology
1	To verbally supplement an automated estimate message exchange which does not automatically transfer Item 18 flight plan information.	**NEGATIVE RVSM** or **NEGATIVE RVSM STATE AIRCRAFT** [as applicable]
2	To verbally supplement estimate messages of non-RVSM approved aircraft.	**NEGATIVE RVSM** or **NEGATIVE RVSM STATE AIRCRAFT** [as applicable]
3	To communicate the cause of a contingency relating to an aircraft that is unable to conduct RVSM operations due to severe turbulence or other severe weather related phenomenon [or equipment failure, as applicable].	**UNABLE RVSM DUE TURBULENCE** [or **EQUIPMENT**, as applicable]

Appendix J to the RVSM/TF/23 Report

Task List

SN	Activity	Start	Complete	Present Status	Group Responsible	
1	**Identify Operational Need**					
2	Agree operational need for Japan Domestic Airspace and Incheon FIR, Korea	5-Jul-04	7-Jul-04	**Completed**	ATC/WG, RVSM Task Force	
3	**Safety Assessment**					
4	Review available summary data (non-compliant aircraft, aberrant aircraft etc)	5-Jul-04	31-Oct-05		SAM/WG, MAAR, RVSM Task Force	
5	Examine history of height keeping errors related to ATC clearances and assess possible RVSM impact	5-Jul-04	31-Oct-05		SAM/WG, MAAR, RVSM Task Force	
6	Confirm RVSM risk model assumptions/parameters are consistent with airspace where RVSM is to be applied	5-Jul-04	31-Oct-05		SAM/WG, MAAR, RVSM Task Force	
7	Conduct analyses to predict occupancy after RVSM implementation	5-Jul-04	31-Oct-05		SAM/WG, MAAR, RVSM Task Force	
8	Collect weather and turbulence data for analysis	5-Jul-04	31-Oct-05		SAM/WG, OPSAIR, RVSM Task Force	
9	Report monthly large height deviations (including operational errors) to MAAR	1-Mar-04	31-Oct-05		ATS Providers, Users	
10	Collect traffic sample data for safety assessment for RVSM implementation	1-Aug-04	30-Sep-04		ATS Providers	
11	**Feasibility Analysis**					
12	Examine the operational factors and workload associated with RVSM implementation	5-Jul-04	31-May-05		ATC/WG, RVSM Task Force	
13	**Determination of Requirements (airborne & ground systems)**					
14	States assess the impact of RVSM implementation on controller automation systems and plan for upgrades/m	5-Jul-04	31-May-05		States	
15	**Aircraft & Operator Approval Requirements**					
16	Promulgate the operational approval process	5-Jul-04	31-May-05		OPS/AIR/WG, RVSM Task Force	
17	Notify States when significant changes occur to RVSM documentation	5-Jul-04	31-May-05		OPS/AIR/WG, RVSM Task Force	
18	**Perform Rulemaking (if required)**					
19	Recommend State airspace regulatory documentation	5-Jul-04	31-May-05		States	
20	**Perform Necessary Industry & International Co-ordination**					
21	Establish target implementation date	5-Jul-04	7-Jul-04		RVSM Task Force, States	
22	Report to ATM/AIS/SAR/SG/15	00 Jun 05	00 Jun 05		RVSM Task Force Chairman	
23	Process Doc 7030 amendment	5-Jul-04	31-Dec-04		ICAO Regional Office (to include BOB FIRs)	
24	Publish advance AIC	5-Jul-04	31-Jul-04		States	
25	Publish AIP Supplement containing RVSM policy/procedures	5-Jul-04	31-Oct-04		States	
26	Review inter-facility coordination procedures	5-Jul-04	31-May-05		States	
27	Finalize changes to Letters of Agreement	5-Jul-04	31-May-05		States	
28	Disseminate information on RVSM policy and procedures through RVSM Website	5-Jul-04	31-May-05		OPS/AIR WG, RVSM Task Force	
29	**Approval of Aircraft & Operators**					
30	Establish approved operations readiness targets	5-Jul-04	31-May-05		IATA, ATC/WG, RVSM Task Force	
31	Assess operator readiness	5-Jul-04	31-May-05		IATA, OPS/AIR/WG	
32	**Develop Pilot & ATC Procedures**					
33	Review application of tactical offset procedure to mitigate the effects of wake turbulence and TCAS alerts	5-Jul-04	28-Feb-05		RVSM Task Force	

Task List

SN	Activity	Start	Complete	Present Status	Group Responsible	
34	Review weather and contingency procedures for applicability under RVSM	5-Jul-04	28-Feb-05		RVSM Task Force	
35	Publish appropriate Pilot/ATC policy & procedures on RVSM website	5-Jul-04	28-Feb-05		RVSM Task Force	
36	Identify transition areas and procedures	5-Jul-04	31-Oct-04		States, ATC/WG	
37	Conduct simulation modelling to assess impact of RVSM operations	5-Jul-04	31-May-05		States, ATC/WG	
38	Report on simulation activity	5-Jul-04	31-May-05		ATC/WG, RVSM Task Force	
39	Coordinate use of ACAS II (TCAS V.7) for RVSM operations	5-Jul-04	31-May-05		OPS/AIR/WG, RVSM Task Force	
40	Develop procedures for handling non-compliant aircraft (inc ferry & mntce) in ATS documentation	5-Jul-04	31-May-05		OPS/AIR/WG, ATC/WG, RVSM Task Force	
41	Develop mutually acceptable ATC procedures for non-approved State acft to transit RVSM airspace	5-Jul-04	31-Oct-04		ATC/WG, RVSM Task Force	
42	Implement procedures for suspension of RVSM	5-Jul-04	31-Oct-04		ATC/WG, RVSM Task Force	
43	Liaise with State defense authorities regarding military operations	5-Jul-04	31-Oct-04		States	
44	**Pilot & ATC Training**					
45	Provide Pilot/ATC training documentation based on past experience	31-Oct-04	31-Oct-04		IATA, RVSM Task Force	
46	Conduct local RVSM training for air traffic controllers	5-Jul-04	31-May-05		States, ATC/WG	
47	**Perform System Verificiation**					
48	Height keeping performance monitoring needed to undertake initial safety analysis	5-Jul-04	ongoing		APARMO, MAAR and SAM/WG, RVSM Task Force	
49	Provide representative traffic movement data to MAAR	1-Aug-04	30-Sep-04		States	
50	Undertake initial safety analysis	1-Oct-04	31-Oct-04		SAM/WG, RVSM Task Force	
51	Prepare/maintain regional status report detailing RVSM implementation plans	5-Jul-04	9-Jun-05		RVSM Task Force	
52	**Final Implementation Decision**				RVSM Task Force	
53	Review aircraft altitude-keeping performance and operational errors	5-Jul-04	31-May-05		SAM/WG, OPS/AIR/WG	
54	Complete ATS State documentation	5-Jul-04	31-May-05		States	
55	Publish Trigger NOTAM	31-May-05	31-May-05		States	
56	Complete readiness assessment	31-May-05	31-May-05		APARMO, MAAR and SAM/WG, RVSM Task Force	
57	Complete safety analysis	31-May-05	31-May-05		APARMO, MAAR and SAM/WG, RVSM Task Force	
58	**Declare Initial Operational Capability**				APARMO, MAAR and SAM/WG, RVSM Task Force	
59	**Monitor System Performance**					
60	Perform Follow-On Monitoring	5-Jul-04	On-going		APARMO, MAAR, OPS/AIR/WG, SAM/WG	
61	Adopt the global use of Minimum Monitoring Requirements (MMR)	5-Jul-04	On-going		RVSM Task Force	
62	**Declare Full Operational Capability**				RVSM Task Force	
63	Special ATS Coordination Meeting (Bangkok) - Japan & Korea Implementation - 3 days	5-Jul-04	7-Jul-04	**Completed**	RVSM Task Force	
64	Task Force/22 (Bangkok) - Review of FLOS for Western Pacific/South China Sea - 5 days	20-Sep-04	24-Sep-04	**Completed**	RVSM Task Force	
66	Task Force/23 (Bangkok) - Japan & Korea Implementation - 5 days	18-Oct-04	22-Oct-04		RVSM Task Force	

Task List

SN	Activity	Start	Complete	Present Status	Group Responsible	
67	Task Force/24 (Bangkok) - 1 year follow up Bay of Bengal and Beyond implementation - 5 days	8-Nov-04	12-Nov-04		RVSM Task Force	
68	Task Force/25 (Bangkok) - Japan & Korea Implementation - 5 days	00 Feb 05	00 Feb 05		RVSM Task Force	
	RVSM Seminar/6	00 Feb 05	00 Feb 05		RVSM Task Force	
69	Task Force/26 (Bangkok) - Japan & Korea Implementation (Go/ No-Go Meeting) - 5 days	00 May 05	00 May 05		RVSM Task Force	
70	Task Force/27 (Bangkok) - 90 days follow up Japan-Korea implementation - 3 days	00 Sep 05	00 Sep 05		RVSM Task Force	
71	Task Force/28 (Bangkok) - 1 year follow up Japan-Korea implementation - 3 days	00 Jun 06	00 Jun 06		RVSM Task Force	

Proposal for Amendment of
Regional Supplementary Procedures ICAO Doc 7030/4
(Serial No. APAC-S 04/… - MID/ASIA RAC)

a) **Regional Supplementary Procedures:** MID/ASIA

b) **Proposing State(s):** Republic of Korea

c) **Proposed Amendment:** Editorial note: Amendments are arranged to show deleted text using strikeout (~~text to be deleted~~), and added text with grey shading (text to be inserted).

On page MID/ASIA/RAC-9 dated 20/2/02

Add "Incheon" to Paragraph 6.5.1.1.

6.5.1.1 The reduced vertical separation minimum (RVSM) shall be applied for flights within the Auckland Oceanic, Bali, Bangkok, Brisbane, Hanoi, Ho Chi Minh, Hong Kong, Honiara, Incheon, Jakarta, Kota Kinabalu, Kuala Lumpur, Manila, Melbourne, Naha, Nauru, New Zealand, Phnom Penh, Port Moresby, Singapore, Taibei, Tokyo, Ujung Pandang, and Vientiane flight information regions (FIRs).

d) **Proposer's Reason for Amendment:** ……..

e) **Proposed Implementation Date of the Amendment:** xx yy 2005

f) **Proposal Circulated to the following States and international organizations:**

Australia
Austria
Bahrain
Bangladesh
Belgium
Bhutan
Brunei Darussalam
Cambodia
China (cc: Hong Kong, China) (cc: Macao, China)
Cook Islands
Democratic People's Republic of Korea
Fiji
Finland
France
Germany
India
Indonesia
Iran, Islamic Republic of
Israel
Italy
Japan
Jordan
Kiribati
Kuwait
Lao People's Democratic Republic
Papua New Guinea
Philippines
Portugal
Republic of Korea*
Russian Federation
Saudi Arabia
Singapore
Solomon Islands
South Africa
Spain
Sri Lanka

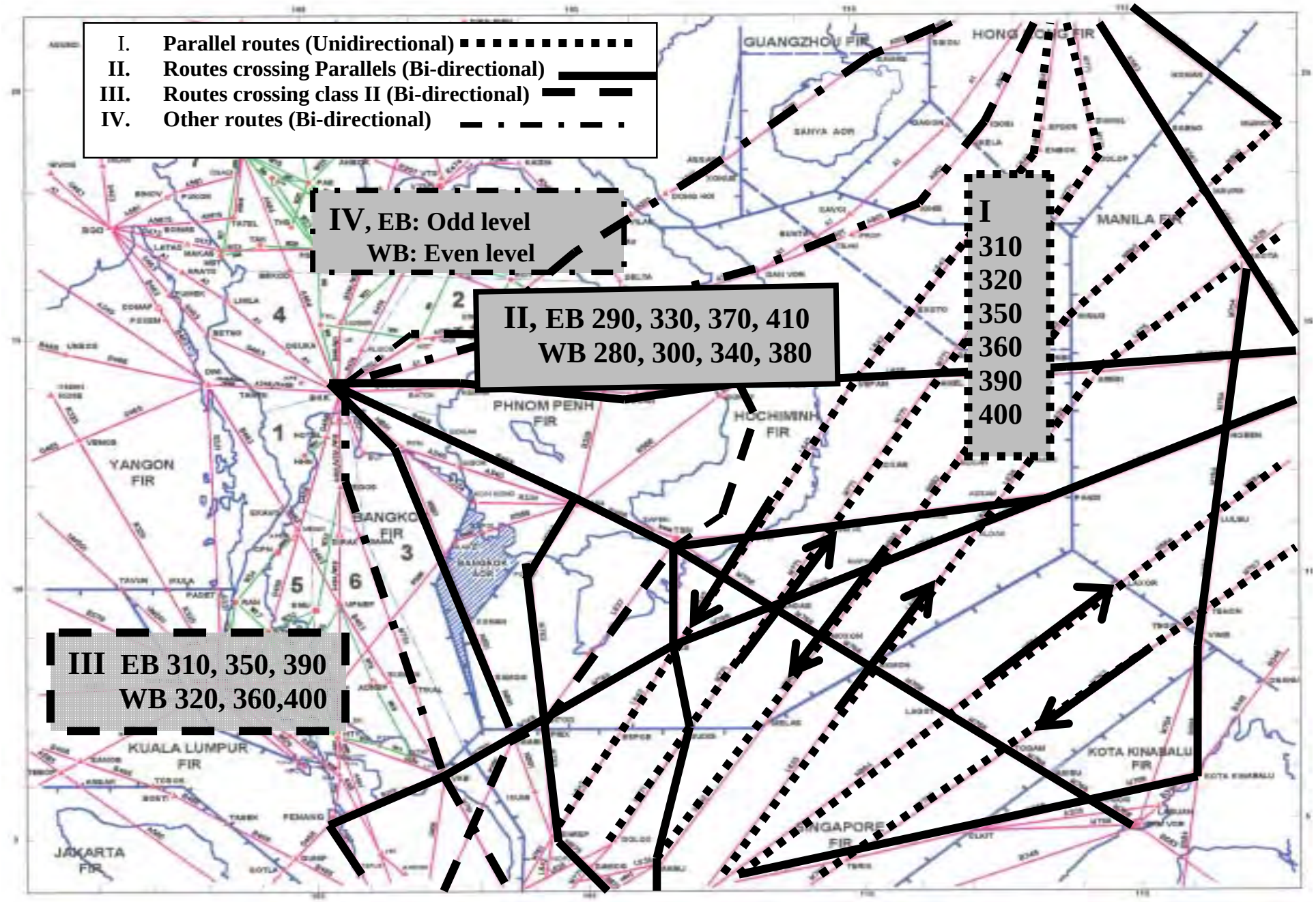
Switzerland	United Kingdom	IATA
Thailand	United States	IFALPA
Tonga	Vanuatu	IFATCA
Turkey	Viet Nam	
United Arab Emirates		

g) **Secretariat comments**:

1. Japan plans to expand the RVSM application on xx yy 2005 to their domestic airspace, which adjoins the Incheon FIR. With the simultaneous introduction of RVSM in the Japanese domestic airspace and the Incheon FIR, traffic flow would be facilitated without any need for transition between the airspaces.

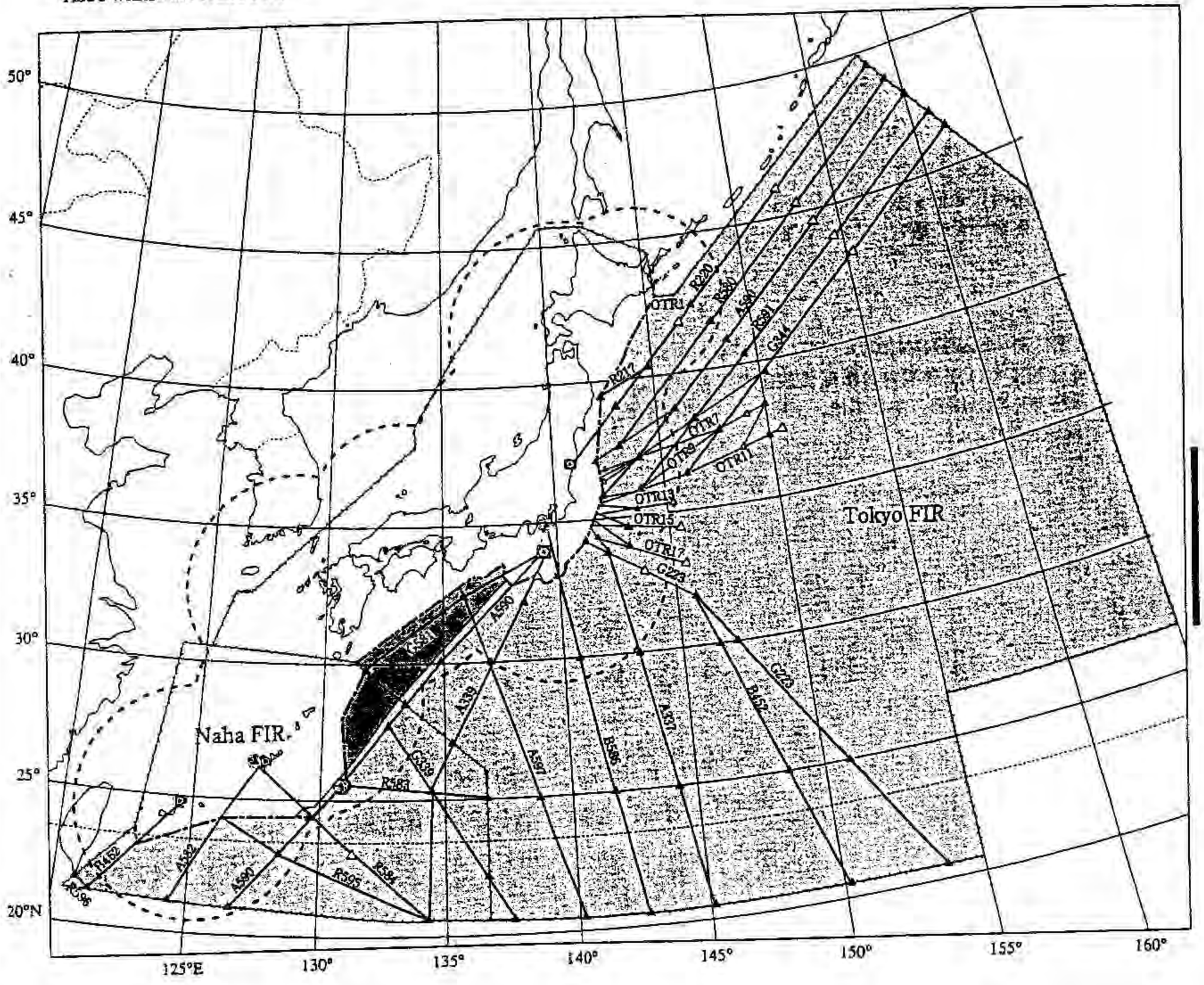
2. The introduction of RVSM in the Incheon FIR will serve to increase the availability of fuel and time efficient flight levels and tracks to users, reduce the complexity of the air traffic management task (e.g., enhance the capability to accommodate traffic on intersecting tracks) and enhance airspace capacity.

− End −


I. Parallel routes (Unidirectional)
II. Routes crossing Parallels (Bi-directional)
III. Routes crossing class II (Bi-directional)
IV. Other routes (Bi-directional)
IV, EB: Odd level
WB: Even level
II, EB 290, 330, 370, 410
WB 280, 300, 340, 380
I
310
320
350
360
390
400
III EB 310, 350, 390
WB 320, 360,400
GUANGZHOU FIR
HONG KONG FIR
MANILA FIR
PHNOM PENH FIR
HOCHIMINH FIR
YANGON FIR
BANGKOK FIR
KUALA LUMPUR FIR
KOTA KINABALU FIR
SINGAPORE FIR
JAKARTA FIR

RVSM Airspace

東京FIR及び那覇FIRの太平洋上の洋上管制区
(那覇FIR内の航空路A590の保護空域を含む。)
Oceanic control area over the Pacific Ocean
within the Tokyo FIR and the Naha FIR
(Including the protected airspace of airway
A590 within the Naha FIR)



RVSM適合機のみの飛行が承認される空域（FL290以上FL390以下）
Exclusionary RVSM airspace (At or above FL290 at or below FL390)

RVSM適合機／非適合機とも飛行が承認される空域
Non-exclusionary RVSM airspace

QNH altimeter setting changing line

Radar coverage